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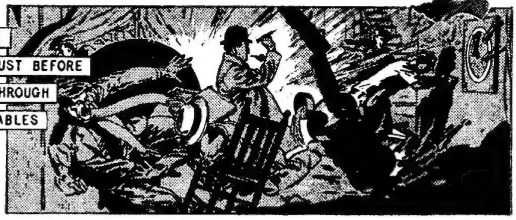
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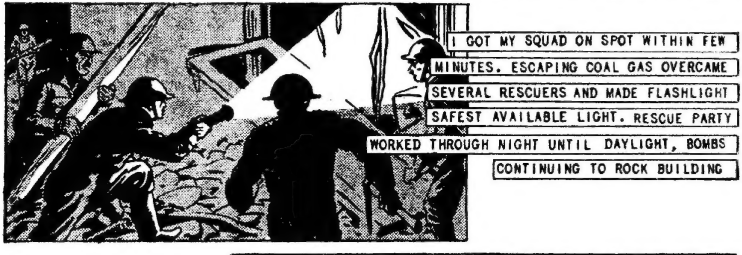
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Minute And Mighty

The traditional "bigger and better" is definitely going out the window—particularly in regard to precision instruments of electrical types. All radio "hams," all electronic scientists, are well aware of the basic facts—but there are certain inherent imagination-tickling features in them.

First, and long known, is the fact that there is a very definite mechanical relationship between the wave length radiated by an electrical structure, which means, therefore, frequency of oscillation possible in it, and the physical dimensions of the structure. That applies all the way from the electromagnetic oscillations of radium's gamma rays to the extremely long-wave radio radiation. One of the standard methods of making precise measurements of the oscillation frequency of a ultra-high frequency transmitter depends on that—they measure the wave length of the radiation with a yardstick! The higher the frequency, the shorter the waves, the shorter the wires that *can be used* to handle it—and the shorter the wires *must* be for practical use of the oscillations generated. The apparatus not only can be, but absolutely must be, very small, very compact, its leads and connections extremely short. Even an extra eighth or sixteenth of an inch of lead completely changing the characteristics of the device.

Second, and of more recent date, is the fact that it is almost impossible, and certainly impracticable, to design an amplifier using more than two stages of amplification at any one frequency range in modern, high-gain amplifier tubes, An outfit using two high-gain stages may be tricked up with three, four, or six additional gadget-tubes, such as automatic volume control, inverse feedback, push-pull power amplifier with phase inverter tube, voltage regulator equipment, and a separate four-diode bridge-type full-wave rectifier. But two amplifier stages is about all that can be handled—or is ever needed, because those two stages can give a gain of one hundred thousand to one. It's almost impossible to stabilize an amplifier with that much gain, let alone more. The output leads of such an amplifier will tend to induce minute currents in the input wires, even though they are several inches apart, and shielded behind metal grounding. If so much as 1/100,000th of a volt is induced in the input—the output will reflect its own variations, not the variations the amplifier is intended to work on. The set will, in brief, go into self-excited oscillation, and squeal its silly head off. If a third stage of that high-gain amplification is attempted, it will then take only 1/30,000,000th of a volt of feedback to make it scream senselessly and indefinitely. The best way to prevent that oscillation, I'm told, is to put a switch in the power-supply leads, and turn the thing off.

These two factors, taken together, indicate that radio instruments of the near future not only can be, but darned well have to be, extremely small. Extremely short leads from tube to tube—excellent shielding and superinsulation—enforced small size of parts—immense amplification with only a very few circuit-units. The most efficient type of apparatus, with those things borne in mind, would be a complete radio set, with all its parts, built in and sealed permanently in a single small glass or metal tube.

So—you've read about "magic" jewels? Obviously, they were highly advanced, complete sealed-unit ultra-frequency radio transceivers, not-bigger and better handie-talkie sets. The ring-mounting or bracelet associated with them, clearly, was the tiny, very short aërial that such extreme frequencies must use.

THE EDITOR.

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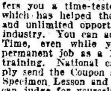

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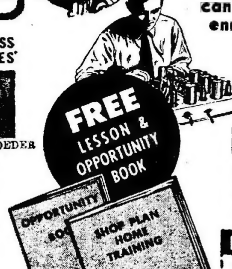

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Attitude

by Hal Clement

Their captors had a very curious system, a very curious motivation. The captives were allowed to—even encouraged to—build devices to bring about their escape. Only at the last moment, mysteriously, the captors always stopped them—

Illustrated by Kolliker

Dr. Little woke up abruptly, with a distinct sensation of having just stepped over a precipice. His eyes flew open and were greeted by the sight of a copper-colored metal ceiling a few feet above; it took him several seconds to realize that it was keeping its distance, and that he was not falling either toward or away from it. When he did, a grimace of disgust flickered across his face; he had lived and slept through enough days and nights in interstellar space to be accustomed to weightlessness. He had no business waking up like a cadet on his first flight, grasping for the nearest support—he had no business waking up at all, in these surroundings! He shook his head; his mind seemed to be working on slow time, and his pulse, as he suddenly realized as the pounding in his temples forced itself on his awareness, must be well over a hundred.

This was not his room. The metal of the walls was different, the light was different—an orange glow streaming from slender tubes running along the junction of wall and ceiling. He turned his head to take in the rest of the place, and an agonizing barrage of pins and needles shot the length of his body. An attempt to move his arms and legs met with the same result; but he managed to bend his neck enough to discover that he was enveloped to the shoulders in a sacklike affair bearing all the earmarks of a regulation sleeping bag. The number stenciled on the canvas was not his own, however.

In a few minutes he found himself able to turn his head freely and proceeded to take advantage of the fact by examining his surroundings. He found himself in a small chamber, walled completely with the coppery alloy. It was six-sided, like the cells in a beehive; the only opening was a circular hatchway in what Little considered the ceiling—though, in a second-order flight, it might as well have been a floor or wall. There was no furniture of any description. The walls were smooth, lacking even the rings normally present to accommodate the anchoring snaps of a sleeping bag. There was light shining through the grille which covered the hatchway, but from where he was Little could make out no details through the bars.

He began to wriggle his toes and fingers, ignoring as best he could the resulting sensations; and in a few minutes he found himself able to move with

little effort. He lay still a few minutes longer, and then unsnapped the top fasteners of the bag. The grille interested him, and he was becoming more and more puzzled as to his whereabouts. He had no recollection of any unusual events; he had been checking over the medical stores, he was sure, but he couldn't recall retiring to his room afterward. What had put him to sleep? And where had he awakened?

He grasped the top of the bag and peeled it off, being careful to keep hold of it. He started to roll it up and paused in astonishment. A cloud of dust, fine as smoke, was oozing from the fibers of the cloth with each motion, and hanging about the bag like an atmosphere. He sniffed at it cautiously and started coughing; the stuff was dry, and tickled his throat unpleasantly. There could be only one explanation; the bag had been drifting in open space for a length of time sufficient to evaporate every trace of moisture from its fibers. He unrolled it again and looked at the stenciled number—GOA-III-NA12-422. The first three groups confirmed his original belief that the bag had belonged to the *Gomeisa;* the last was a personal number indicating the identity of the former owner, but Little could not remember whose number it was. The fact that it had been exposed to the void was not reassuring.

Dismissing that phase of the problem for the moment, the doctor rolled the bag into a tight bundle. He was drifting weightless midway between ceiling and floor, almost in the center of the room; the hatchway was in one of the six corners of the ceiling. Little hurled the bundle in the opposite direction. It struck the far corner and rebounded without much energy; air friction brought it to a halt a few feet from the wall. The doctor drifted more slowly in the direction of the grating. His throw had been accurate enough to send him within reach of it; he caught hold of one of the bars and drew himself as close as possible.

Any lingering doubt that might have remained in his still befuddled brain as to whether or not he were still on board the *Gomeisa* was driven away as he caught his first glimpse through the grille. It opened—or would have opened had it been unlocked—onto a corridor which extended in two directions as far as the doctor's limited view could reach. The hallway was about thirty feet square, but there its orthodox characteristics terminated. It had been built with a sublime disregard for any possible preferred "up" or "down" direction. Hatches opened into all four sides; those opposite Little's station were circular, like his own, while those in the "side" walls were rectangular. From a point beside each opening, a solidly braced metal ladder extended to the center of the corridor, where it joined a heavy central pillar plentifully supplied with grips for climbing. Everything was made of the copperlike material, and the only light came from the orange-glow tubes set in the corners of the corridor.

Dr. Little maintained his position for several minutes, looking and listening; but no sound reached his ears, and he could perceive nothing through the gratings which covered the other hatchways. He also gave a few moments' attention to the lock on his own grating, which evidently was operated from either side; but it was designed to be opened by a complicated key, and the doctor had no instruments for examining its interior. With a sigh he hooked one arm about a bar of the grating and relaxed, trying to reason out the chain of events which had led up to these peculiar circumstances.

The *Gomeisa* had been a heavy cruiser, quite capable of putting up a stiff defense to any conceivable attack. Certainly no assault could have been so sudden and complete that the enemy would be in a position to use hand weapons on the crew before an alarm was raised—the idea was absurd; and fixed mount projectors of any type

would have left more of a mark on the doctor than he could find at this moment. Furthermore, the ship had been, at the last time of which Little had clear recollection, crossing the relatively empty gulf between the Galaxy proper and the Greater Magellanic Cloud—a most unpropitious place for a surprise attack. The star density in that region is of the order of one per eight thousand cubic parsecs, leaving a practically clear field for detector operations. No, an attack did not seem possible; and yet Little had been deprived of consciousness without warning, had been removed from the *Gomeisa* in that state, and had awakened within a sleeping bag which showed too plainly the fact that part, at least, of the cruiser had been open to space for some time.

Was he in a base on some planet of one of those few stars of the "desert," or in some ship of unheard-of design? His weightlessness disposed of the first idea before it was formulated; and the doctor glanced at his belt. Through the glass window in its case, he could see the filament of his personal equalizer glowing faintly; he was in a ship, in second-order flight, and the little device had automatically taken on the task of balancing the drive forces which would, without it, act unequally on each element in his body. As a further check, he felt in his pocket and drew out two coins, one of copper and one of silver. He held them nearly together some distance from his body, released them carefully so as not to give them velocities of their own, and withdrew his hand. Deprived of the equalizer field, they began to drift slowly in a direction parallel to the corridor, the copper bit moving at a barely perceptible crawl, the silver rapidly gaining. The corridor, then, was parallel to the ship's line of flight; and the coins had fallen forward, since the silver was more susceptible to the driving field action.

Little pushed off from the ceiling and retrieved the coins, restoring them to his otherwise empty pocket. He had not been carrying instruments or weapons, and had no means of telling whether or not he had been searched while unconscious. Nothing was missing, but he had possessed nothing worth taking. The fact that he was locked in might be taken to indicate that he was a prisoner, and prisoners are customarily relieved of any possessions which prove helpful in an escape. Only beings who had had contact with humanity would logically be expected to identify which of the numerous gadgets carried by the average man are weapons; but the design of this craft bore no resemblance to that of any race with which Little was acquainted. He still possessed his wrist watch and mechanical pencil, so the doctor found himself unable to decide even the nature of his captors, far less their intentions.

Possibly he would find out something when—and if—he was fed. He realized suddenly that he was both hungry and thirsty. He had been unconscious long enough for his watch to run down.

Little's pulse had dropped to somewhere near normal, he noticed, as he drifted beside the hatch. He wondered again what had knocked him out without leaving any mark or causing some sensation; then gave up this line of speculation in favor of the more immediate one advocated by his empty stomach. He fell asleep again before he reached any solution. He dreamed that someone had moved Rigel to the other side of the Galaxy, and the navigator couldn't find his way home. Very silly, he thought, and went on dreaming it.

A gonglike note, as penetrating as though his own skull had been used as the bell, woke him the second time. He was alert at once, and instantly perceived the green, translucent sphere suspended a few feet away. For a moment he thought it might be one of his captors; then his nose told him differently. It was ordinary lime juice, as carried by practically every Earth cruiser. A moment's search served to locate, beside

the hatchway, the fine nozzle through which the liquid had been impelled. The doctor had no drinking tube, but he had long since mastered the trick of using his tongue in such circumstances without allowing any other part of his face to touch the liquid. It was a standard joke to confront recruits, on their first free flight, with the same problem. If nose or cheek touched the sphere, surface tension did the rest.

Little returned to the door and took up what he intended to be a permanent station there. He was waiting partly for some sign of human beings, partly for evidence of his captors, and, more and more as time wore on, for some trace of solid food. He waited in vain for all three. At intervals, a pint or so of lime juice came through the jet and formed a globe in the air beside it; nothing else. Little had always liked the stuff, but his opinion was slowly changing as more and more of it was forced on him. It was all there was to drink, and the air seemed to be rather dry; at any rate, he got frightfully thirsty at what seemed unusually short intervals.

He wound his watch and discovered that the "feedings" came at intervals of a little over four hours. He had plenty of chance to make observations, and nothing else to observe; it was not long before he was able to predict within a few seconds the arrival of another drink. Later, he wished he hadn't figured it out; the last five or ten minutes of each wait were characterized by an almost agonizing thirst, none the less painful for being purely mental. Sometimes he slept, but he was always awake at the zero minute.

With nothing to occupy his mind but fruitless speculation, it is not surprising that he lost all track of the number of feedings. He knew only that he had slept a large number of times, had become deathly sick of lime juice, and was beginning to suffer severely from the lack of other food, when a faint suggestion of weight manifested itself. He looked at his equalizer the instant he noticed the situation and found it dark. The ship had cut its second-order converters, and was applying a very slight first-order acceleration in its original line of flight—the barely perceptible weight was directed toward what Little had found to be the stern. Its direction changed by a few degrees on several occasions, but was restored each time in a few seconds. The intensity remained constant, as nearly as Little could tell, for several hours.

Then it increased, smoothly but swiftly, to a value only slightly below that of Earthly gravity. The alterations in direction became more frequent, but never sudden or violent enough to throw Little off his feet—he was now standing on the rear wall, which had become the floor. Evidently the ship's pilot, organic or mechanical, well deserved the name. For nearly half an hour by the watch, conditions remained thus; then the drive was eased through an arc of ninety degrees, the wall containing the hatchway once more became the ceiling, and within a few minutes the faintest of tremors was perceptible through the immense hull and the direction of gravity became constant. If this indicated a landing, Little mentally took off his hat to the entity at the controls.

The doctor found himself badly placed for observation. The hatch was about four feet above the highest point he could reach, and even jumping was not quite sufficient to give him a hold on the bars. He estimated that he had nearly all of his normal hundred and ninety pounds Earth weight, and lack of proper food for the last several days had markedly impaired his physical powers. It was worse than tantalizing; for suddenly, for the first time since he had regained consciousness in this strange spot, he heard sounds from outside. They were distorted by echoes, sounding and reverberating along the corridor outside, and evidently originated at a considerable distance, but

they were definitely and unmistakably the voices of human beings.

For minutes the doctor waited. The voices came no nearer, but on the other hand they did not go any farther away. He called out, but apparently the group was too large and making too much noise of its own to hear him. The chatter went on. No words were distinguishable, but there was a prevailing overtone of excitement that not even the metallic echoes of the great hull could cover. Little listened, and kept his eyes fixed on the hatchway.

He heard nothing approach, but suddenly there was a faint click as the lock opened. The grille swung sharply inward until it was perpendicular to the wall in which it was set; then the side bars of its frame telescoped outward until they clicked against the floor. The crossbars separated simultaneously, still maintaining equal distances from each other, and a moment after the hatch had opened a metal ladder extended from it to the floor of the room. It took close examination to see the telescopic joints just below each rung. The metal tubing must be paper-thin, Little thought, to permit such construction.

The doctor set foot on the ladder without hesitation. Presumably, his captors were above, and wanted him to leave the room in which he was imprisoned. In this wish he concurred heartily; he was too hungry to object affectively, anyway. He made his way up the ladder to the corridor, forcing his shoulders through the narrow opening. The human voices were still audible, but they faded into the background of his attention as he examined the beings grouped around the hatch.

There were five of them. They bore some resemblance to the nonhumans of Tau Ceti's first planet, having evidently evolved from a radially symmetric, starfishlike form to a somewhat more specialized type with differentiated locomotive and prehensile appendages. They were five-limbed and headless, with a spread of about eight feet. The bodies were nearly spherical; and if the arms had been only a little thicker at the base it would have been impossible to tell where body left off and arm began. The tube feet of the Terrestrial starfish were represented by a cluster of pencil-thick tendrils near the tip of each arm and leg—the distinction between these evidently lying in the fact that three of the appendages were slightly thicker and much blunter at the tips than the two which served as arms. The tendrils on the "legs" were shorter and stubbier, as well. The bodies, and the appendages nearly to their tips, were covered with a mat of spines, each several inches in length, lying for the most part nearly flat against the skin. These either grew naturally, or had been combed away from the central mouth and the five double-pupiled eyes situated between the limb junctions.

The beings wore metal mesh belts twined into the spines on their legs, and these supported cases for what were probably tools and weapons. Their "hands" were empty; evidently they did not fear an attempted escape or attack on the doctor's part. They made no sound except for the dry rustle of their spiny armor as they moved. In silence they closed in around Little, while one waved his flexible arms toward one end of the passageway. A gentle shove from behind, as the doctor faced in the indicated direction, transmitted the necessary command, and the group marched toward the bow. Two of the silent things stalked in front, two brought up the rear; and at the first opportunity, the other swarmed up one of the radial ladders and continued his journey directly over Little's head, swinging along by the handholds on the central beam.

As they advanced, the voices from ahead grew slowly louder. Occasional words were now distinguishable. The speakers, however, were much farther away than the sound of their voices sug-

gested, since the metal-walled corridor carried the sounds well if not faithfully. Nearly three hundred yards from Little's cell, a vertical shaft of the same dimensions as the corridor interrupted the latter. The voices were coming from below. Without hesitation, the escort swung over the lip of the shaft and started down the ladder which took up is full width; Little followed. On the way, he got some idea of the size of the ship he was in. Looking up, he saw the mouths of two other corridors entering the shaft above the one he had traversed; at the level of the second, another hallway joined it from the side. Evidently he was not near the center line of the craft; there were at least two, and possibly three, tiers of longitudinal corridors. He had already seen along one of those corridors; the ship must be over fifteen hundred feet in length. Four vessels the size of the *Gomeisa* could have used the immense hull for a hangar, and left plenty of elbow room for the servicing crews.

Below him, the shaft debouched into a chamber whose walls were not visible from Little's position. His eyes, however, which had become exceedingly tired of the endless orange radiance which formed the ship's only illumination, were gladdened at the sight of what was unquestionably daylight leaking up from the room. As he descended, two of the walls became visible—the shaft opened near one corner—and in one of them he finally saw an air lock, with both valves open. He went hastily down the remaining few feet and stopped as he touched the floor. His gaze took in on the instant the twenty-yard square chamber, which seemed to occupy a slight outcrop of the hull, and stopped at the corner farthest from the air lock. Penned in that corner by a line of the starfish were thirty-eight beings; and Little needed no second glance to identify the crew of the *Gomeisa*. They recognized him simultaneously; the chatter stopped, to be replaced by a moment's silence and then a shout of "Doc!" from nearly two score throats. Little stared, then strode forward and through the line of guards, which opened for him. A moment later he was undergoing a process of handshaking and back-slapping that made him wonder. He didn't think he had been *that* popular.

Young Captain Albee was the first to speak coherently.

"It's good to see you again, sir. Everyone but you was accounted for, and we'd begun to think they must have filed you away in formaldehyde for future reference. Where were you?"

"You mean I was the only one favored with solitary confinement?" asked Little. "I woke up in a cell upstairs, about two thirds of the way back, with less company than Jonah. I could see several other sets of bars from my stateroom door, but there was nothing behind any of them. I haven't seen or heard any living creature but myself since then. I can't even remember leaving, or being removed from the *Gomeisa*. Does anyone know what happened?"

"How is it that you don't?" asked Albee. "We were attacked; we had a fight, of a sort. Did you sleep through it? That doesn't seem possible."

"I did, apparently. Give me the story."

"There's not much to give. I was about to go off watch when the detectors picked up a lump that seemed highly magnetic, and something over eighty million tons mass. We hove to, and came alongside it while Tine took a couple of pictures of the Galaxy and the Cloud so that we could find it again. I sent out four men to take samples, and the instant the outer door was opened these things"—he jerked his head toward the silent guards—"froze it that way with a jet of water on the hinge and jamb. They were too close to use the heavy projectors, and we still had no idea there was a ship inside the meteoric stuff. They were in spacesuits, and got into the lock before we

could do anything. By the time we had our armor on they had burned down the inner lock door and were all through the ship. The hand-to-hand fighting was shameful; I thought I knew all the football tricks going, and I'd taught most of them to the boys, but they had every last one of us pinned down before things could get under way. I never saw anything like it.

"I still can't understand what knocked you out. They used no weapons—that annoyed me—and if you didn't put a suit on yourself I don't see how you lived when they opened up your room. The air was gone before they started going over the ship."

"I think I get it," said Little slowly. "Geletane. Four cylinders of it. Did you broadcast a general landing warning when you cut the second-order to examine that phony Bonanza? You didn't, of course, since we weren't in a gravity field of any strength. And the 'meteor' was magnetic, which made no difference to our berylium hull, but made plenty to the steel geletane cylinders, one of which I had unclamped for a pressure test and had left in the tester. I went on about my business, and the field yanked the cylinder out of the tester and against the wall. It didn't make enough noise to attract my attention, because I was in the next room. With the door open. And the valve cracked just a trifle—just enough. I didn't need a suit when these starfish opened my room; I must have been as stiff as a frame member. I had all the symptoms of recovery from suspended

animation when I woke up, too, but I never thought of interpreting them that way. The next ship I'm in, see if I don't get them to rig up an automatic alarm to tell what the second-order fields are doing—"

"You might also put your geletane cylinders back in the clamps when, and if, this happy state of affairs eventuates," remarked Goldthwaite, the gloomy technical sergeant. "May I ask what happens now, captain?"

"I'm afraid it isn't up to me, Goldy," returned Albee. "But I don't suppose they plan to keep us in this corner indefinitely."

Probably they didn't, but Albee was beginning to doubt his own statement before anything else happened. The sun had risen so that it was no longer shining directly into the port, and the great chamber had grown darker as the shadow of the vast interstellar flier crept down and away from its outer wall, when a new party came through the air lock from outside. Two of the pentapods came first, and came to a halt on either side of the inner door; after them crept painfully the long, many-legged, gorgeously furred body of a Vegan. Its antennae were laid along its back, blending with the black and yellow stripes; the tiny, heavily lidded eyes opened wide in the effort to see in what, to the native of the blue star, was nearly total darkness. The line of guards penning in the Earthmen opened and formed a double-walled lane between humans and Vegan.

Albee stepped forward, and at the same moment the interior lights of the chamber flashed on. The Vegan relaxed for a moment as its eyes readjusted themselves; then its antennae snapped erect and began to sway slowly in the simple patterns of the sign language of its race.

"I assume that some of you, at least, understand me," it said. "Our captors, having learned a little of my language in the months I have spent here, hope to save themselves trouble by using me as an interpreter. Do you wish to acknowledge acquaintance with my speech, or do you think it better to act as though our races had never encountered each other? I was not captured near my home planet, so you might get away with such an act."

Most of the Earthmen had some knowledge of Vegan speech—the two systems are near neighbors, and enjoy lively commercial relations—and all looked to Albee for a decision. He wasted little time in thought; it was evident that they would be better off in communication with their captors than otherwise.

"We might as well talk," he answered, forming the signs as well as he could with his arms. "We should like to find out all you can tell us about these creatures, and it is unlikely that we would be given the chance to communicate secretly with you. Do you know where we are, and can you tell us anything about this planet and its people?"

"I know very little," was the answer. "I believe this world is somewhere in the Cloud, because the only time one of us was ever outside the fort at night he could see the Galaxy. Neither I nor my companions can tell you anything about the planet's own characteristics, for we have been kept inside the base which these creatures have established here ever since our capture. We move too slowly in this gravity to escape from them, and, anyway, the sun has not sufficient ultraviolet light to keep us alive. Our captors, we are sure, are not natives of the planet; they seldom venture outside the walls themselves, and always return before nightfall. Furthermore, they live on provisions brought by their interstellar ships, rather than native food.

"They have not told us the reason for our capture. They allow us to prepare everything we need for existence and comfort, but every time we try to divert supplies to the production of weapons, they seem to know it. They

let us nearly finish, and then take it away from us. They never get angry at our attempts, either. We don't understand them."

"If they are so careful of your well being, why do they try to drive us crazy on a steady diet of lime juice?" interrupted Little.

"I could not say; but I will ask, if you wish," returned the Vegan. He swung his fusiform body laboriously around until he was facing one of the creatures who had accompanied him to the ship, and began semaphoring the question. The men watched silently; those who had not understood the preceding conversation were given the gist of it in brief whispers by their fellows. Little had not had a chance to ask if the others had been fed as he had been; their silent but intense interest in the answer to his question indicated that they had. The chronic slowness of Vegan communication rendered them all the more impatient to know the reason, as the black and yellow creature solemnly waved at the motionless pentapod.

There was a brief pause before the latter began to answer. When it did, the Earthman understood why an interpreter was necessary, even though both sides knew the same language. The arms of the creature were flexible enough in front-to-rear motion, as are human fingers; but their relatively great width hampered them in side-to-side waves, and put them at a severe disadvantage in using the Vegan language. The Vegan himself must have had difficulty in comprehending; the Earthman could not make out a single gesture.

Finally the interpreter turned back to the human listeners and reported the result of his questioning:

"The green liquid is all that our captors found in the canteens of your space armor. Since there was a large supply of it on your ship, they assumed it was the principal constituent of your diet. They have, however, salvaged practically all of the contents of your vessel, and you will be allowed shortly to obtain your foodstuffs, cooking equipment, and personal belongings, with the natural exception of weapons. I might add, from my own experience, that their unfamiliarity with your weapons will not help you much if you attempt to smuggle any from the stores. We never could get away with it."

"What surprises me," remarked Albee in English, "is that we are allowed at the supplies at all. These creatures must be extremely confident in their own abilities to take a chance."

"From what you told me of the hand-to-hand fighting, such confidence may be justified," remarked Little with a grin. "Didn't you say that they more or less wiped up the floor with the boys?"

"True," admitted the captain, "but there's no need to rub it in. Why are they so stuck up about it?"

"Stuck up? I was getting a strong impression that, as a race, they must be unusually modest." Albee stared at the doctor, but could not get him to amplify the remark. The Vegan interrupted further conversation, attracting their attention with a flourish of its long antennae.

"I am told that your supplies have been unloaded through another port, and are lying on the ground outside the fort. You are to accompany me and the guards to the pile, and take all the food you wish—you may make several trips, if necessary, to get it all to your quarters in the fort."

"Where is this fort, in relation to the ship?" asked Albee. "What sort of land is around it?"

"The ship is lying parallel to the near wall of the fort, about two hundred yards from it. This air lock is near the nose of the ship, and almost opposite the main valves of the fort. In front of the ship the ground is level for about a quarter of a mile, then dips down into what seems to be a heavily

forested river valley. I don't know what lies beyond, in that direction; this sunlight is too dim for me to make out the details of objects more than a mile or two distant. I do get the impression of hills or mountains—you will be able to see for yourselves, outside. Your eyes are adapted to this light.

"In the other direction, toward the stern, the level plain extends as far as I can see, without any cover. Anyway, you'd be between the ship and the fort for the first five hundred yards, if you went that way, and could easily be cornered. I warn you again that these creatures will outguess you, but—good luck. I've told you all I know."

"I guess we might as well go along and get our stuff, then," remarked Albee to his crew. "Don't do anything rash without orders. We'll wait until we see how the supplies are arranged. *Maybe* we'll have to move some apparatus to get at the food."

The black bodies of the guards had ringed them, almost statuesque in their motionlessness, during the conversation. As the Vegan concluded his speech, he had turned toward the lock; Albee had spoken as the men began to follow. The air of the planet was evidently similar to that of Earth, Vega Five, and the home planet of the pentapods, since both valves of the air lock were open. It had the fresh-air smell which the filtered atmosphere of a spaceship aldays seems to lack, and the men almost unconsciously squared their shoulders and expanded their chests as they passed down the ramp in the wake of the heavily moving Vegan. The scene before them caught all eyes; the interpreter's description had been correct, but inadequate.

The hull of the interstellar cruiser curved high above their heads. The lock chamber occupied a relatively tiny gondola that projected far enough, from its location well to one side of the keel, to touch the ground. The outside of the vessel gleamed with a brilliant silvery luster, in contrast to the coppery glow of the interior. The fort, directly in front of them, was an imposing structure of stone composition half a mile in length and two hundred feet high on the side facing them. The walls were smoothly polished, and completely lacking in windows.

To the left, beyond the nose of the craft, the level meadow continued for several hundred yards, and then dipped abruptly downward. As the Vegan had intimated, the background was filled by a range of rugged-looking mountains, the nearest several miles away. The sun was now nearly overhead, thereby robbing the landscape of the shadows that would have given the Earthman a better idea of its relief. Albee wasted little time looking for what he wouldn't be able to see; he strode on toward the great gate of the fort. In front of the portals were several large heaps of articles, and even at this distance some of them could be recognized as pieces of equipment from the unfortunate *Gomeisa*. The guards closed around the group of human beings and proceeded at the pace set by the captain, leaving the Vegan prisoner to follow at his own speed.

It was evident that a thorough job of looting had been done on the Terrestrial warship. Food and medical supplies, bunks, kitchen equipment, blankets and miscellaneous items of field apparatus were included in the half dozen heaps laid out beneath the glistening black walls. Mixed in with the rest were hand tools and weapons, and Albee, in spite of the Vegan's warning, began promptly to make plans. At his orders, each of the men dragged a shoulder pack out of one of the piles and began filling it with containers of food and drink. The pile of lime-juice bottles was pointedly ignored until Albee, glancing at it, noticed that one case of bottles was not green in color. He went over for a closer look, then extracted one of the plastic containers, opened it and sniffed. His voice, as he

turned to the watching men, was just a little louder than usual:

"Would anyone know where they found this stuff?" His eyes wandered over the faces of the crew. It was Sergeant Goldthwaite who finally answered, hesitantly.

"They *might* have looked between the bulkheads at the cap end of the storage room, cap'n. It was pretty cool there, and seemed like a good place—"

"Not too easy to visit often, in flight," remarked the captain quizzically.

"I never visited it, sir—you can see it hasn't been touched. But you said we would probably touch at Ardome, and I was thinking it might be possible to get rid of it there."

"It probably would. But they have good customs inspectors, and war vessels aren't immune to search. I shudder to think of what would have happened to our reputation if we had made Ardome. Consider yourself responsible for this stuff."

The sergeant gulped. The case of liquor weighed eighty pounds, and could not possibly be crammed into a shoulder pack. He realized gloomily that the captain had inflicted about the only possible punishment, under the circumstances. He put five of the bottles into his pack and began a series of experiments to find out which way his arms went most easily around the case. A small group of pentapods regarded the struggle with interest, their spines waving slowly like a field of wheat in a breeze.

Albee watched, too, for a moment; then he went on, without altering the tone of his words:

"Most of you should have a decent supply of food by now. This planet probably has good water, since the vegetation and clouds appear normal. We should be able to live here without the aid of our generous captors, but we may have some difficulty in avoiding their well-meant ministrations. The Vegan said his people had never been able to fool these pincushions into letting them make or steal a weapon. Remembering that, use every caution in carrying out the orders I am about to give.

"When I have stopped talking, each of you count thirty, slowly, meanwhile working your way toward the handiest tool or weapon in the neighborhood. When you reach thirty, dive for the object of your choice and do your best to get to that forest. You have all, except the doctor, had some experience of the rough-and-tumble tactics of these creatures; the problem, I should say, is to get past them without a fight and into the open. I think we can outrun, on the level, any invertebrate alive. If someone is caught, don't stay to help him; right now, I want to get at least a small crew away from here, where we can work out at our leisure rescue plans for the unlucky ones. Don't all try to get guns; we'll find cutting tools just as useful in the woods. You may start counting."

Without haste, Albee counted over the contents of his pack, swung it to his shoulders. The guards, spines twitching slowly, watched. Reiser, the senior navigator, was helping one of Goldthwaite's engineers drag the ship's electric stove from a pile which chanced also to contain several ion pistols. Little picked up and tested briefly a hand flash, conscious of the fact that guards were watching him closely. The action had some purpose; the flash was almost exactly similar to the pistols. He tightened the straps of his own pack—and someone reached the count of thirty. Albee had chosen that number to give the men time enough to prepare, but not enough to get very far out of pace in the counting.

Almost as one, the human beings turned and sprinted for the bow of the warship. Almost simultaneously, the guards went into action, each singling out a man and going to work. Little, who had not experienced the tactics of the creatures, managed to avoid them

for perhaps five yards; then one of them twined its tendrils about his wrist and literally climbed up onto his back. A moment later, the doctor was face down on the grass, arms and legs held motionless in the grip of the clumsy-looking, stubby limbs. The spines of his captor were not stiff enough to penetrate clothing or skin, but their pressure on the back of his neck was unpleasant. He managed to turn his head sufficiently to see what was going on.

Four men, who had been at the pile nearest the forest, had moved fast enough to avoid contact with their guards. They were now running rapidly toward the declivity; none of the creatures was in pursuit. Albee and a dozen others were practically clear, but one of these was pulled down as Little watched. One man found himself in a relatively clear space and made a dash. Guards closed in from either side, but realized apparently that they were not fast enough to corner the fellow. They turned back to other prey, and the runner was allowed to escape.

Goldthwaite had been in a bad position, with almost the whole group to fight through on his way to the woods. Apparently he never thought of disobeying orders, and going the other way. He dropped the case he had been trying to lift, seized a bottle from it with each hand and headed into the mêlée. Curiously enough, he was the only one using weapons; the guards, festooned with implements snapped to their leg belts, fought with their bare "hands," and the men all ignored their guns and knives in the effort to run. Most of the pentapods at the sergeant's end of the group were engaged, and he got nearly halfway through the group before he was forced to use his clubs.

Then a guard saw him and closed in. Goldthwaite was handicapped by the creature's lack of a head, but he swung anyway. The blow landed between the two upper limbs, just above one eye. It didn't seem to bother the pentapod, whose flexible legs absorbed most of the shock, and the tough plastic of the bottle remained unbroken; but the stopper, urged by interior pressure and probably not closed tightly enough—it may have been the bottle investigated by the captain—blew out, soaking the sergeant's sleeve and jacket with liquor. This particular fluid had some of the characteristics of Earthly champagne, and had been considerably shaken up.

Another of its qualities was odor. This, like the taste of Roquefort, required a period of conditioning before one could become fond of it; and this may have been the reason that the guard fell back for a moment as the liquid foamed out. It is more likely, however, that he was merely startled to find an object his people had decided was harmless suddenly exhibit the characteristics of a projectile weapon. Whatever the reason, he hesitated a split second before pressing the attack; and in that moment the sergeant was past.

Ahead of him, three or four more guards—all who remained unoccupied—converged to meet him. Without waiting for them to charge, Goldthwaite swung the other bottle a few times and hurled it into their midst. He was a man quick to profit by experience. Unfortunately, so were the guards. They saw the liquid which had soaked into the sergeant's clothes, and needed no further assurance that it was harmless. They paid no attention to the flying bottle until it landed.

This flask was stoppered more tightly and did not blow out. The pentapods, who had either seen the behavior of the first bottle or had been told of it, decided that the latest arrival was a different sort of weapon and prudently changed course, avoiding the spot where it lay, and the sergeant, with no such scruples, passed over it like a racehorse. It was several seconds before the guards overcame their nervousness over this new form of delayed-action bomb, and before they could circle around it, Goldthwaite was well out of reach across the

plateau. By that time the action was over.

Albee had gotten away with about a dozen men. One of these had escaped through the co-operation of the Vegan, who, unable to run himself, had tripped up with an antenna the only guard in position to catch the man. Some twenty-five human beings lay about on the field, each held down by a single pentapod. Two swarms of the creatures were coming rapidly toward them, one from the ship and one from the fort. These formed a ring about the area, and Little found himself once more free to get to his feet. He did so, the others gathering round him.

All guns had disappeared, it seemed. One of the men had tried to use his when he had been intercepted, but his opponent had relieved him of the weapon before any damage had been done. Evidently the information had been broadcast, for all the other ion pistols had been confiscated, though the very similar flash tubes had not been touched. Injuries were confined to bruises.

Little was beginning to get ideas about his captors—he had, indeed, begun to get them some time since, as his cryptic remark to Albee had indicated. Every action they performed gave evidence of most peculiar motivation and thought processes, evidence which was slowly sifting its way through Little's mind. He continued to let it sift as the men, still ringed by pentapods, began to march toward the fort.

The great outer gate opened into a chamber large enough to hold the entire group with room to spare. It was about fifteen feet high, metal walled, and possessed but two doors—the outer valve and another, smaller, in the opposite wall, giving access to the interior of the structure. As though the room were an air lock, the inner portal was not opened until the outer had shut. Then the group passed into a brilliantly lit corridor, stretching on ahead of them far into the bowels of the fort. Hallways branched from this at intervals of a few yards, some brightly lighted like the main passage, others in nearly total darkness. They had gone only a short distance when the men were stopped by their escort in front of a small doorway in the left-hand wall.

One of the guards activated a small control in the wall beside the door, causing the latter to slide open. The small chamber disclosed was evidently an elevator car, into which five of the pentapods beckoned an equal number of the men. The door slid to behind them, and several minutes of uneasy silence ensued. Little asked the Vegan if it knew where they were being taken.

"Our quarters are in a superstructure on the roof," gestured the creature. "They may put you there, or on the roof itself. You can live in the open under this sunlight; we need supplementary lighting, both visual and ultraviolet. They have told me nothing. I do not even know whether we will be allowed to communicate any further—though I hope so. My companions and I have long wanted to have someone besides ourselves to talk to."

"I suspect we shall be allowed as much contact as we wish—they may even quarter us in adjoining rooms," remarked Little hesitantly. The Vegan eyed him closely for a moment.

"Ah, you have found a way into their minds, Earthman?" it asked. "I congratulate you. We have never been able to understand their motivation or actions in the slightest degree. It may, of course, be that they think more after your fashion than ours—but that seems unlikely, when your minds and ours are sufficiently alike to agree even on matters of philosophy."

"I am not at all sure I have penetrated their minds," answered Little. "I am still observing, but what I see has so far strengthened the impression I obtained almost at the first. If anything constructive results from my ideas, I will tell, but otherwise I should prefer

to wait until I am much more certain of my conclusions."

The return of the elevator interrupted the laborious exchange of ideas. It had been gone many minutes, but the Vegan sign language is much slower than verbal speech, and the two allies had had time for only a few sentences. They watched silently as five more men and their guards entered the car and disappeared. There was little talk in the ensuing wait; most of the beings present were too fully occupied in thinking. One or two of the men exchanged low-voiced comments, but the majority kept their ideas to themselves. The Vegan, of course, was voiceless; and the guards stood about patiently, silent as ever, rock-still except for the slow, almost unceasing, wave of the black, blunt spines. They did not seem even to breathe.

The silence continued while the elevator returned and departed twice more. Its only interruption consisted of occasional faint metallic sounds of indeterminable origin, echoing and re-echoing along the corridors of the vast pile. To Little, they were interesting for the evidence they provided of activity through the place, and therefore of the presence of a very considerable garrison. Nothing was seen to substantiate this surmise, however, although it was possible to view objects at a considerable distance along the well-lighted passage.

The elevator returned for the last time. Little, the few remaining men, and the Vegan entered, accompanied this time by only two of the pentapods, and the upward journey began. The car was lifted by an extremely quiet—or extremely distant—motor; the continuous silence of the place, indeed, was beginning to jar on human nerves. The elevator rose smoothly; there was no sense of motion during the five or six minutes of the journey. Little wondered whether the creatures had some ulterior motive, or were simply economizing on power—if the fort were only two hundred feet high, an elevator journey from ground to roof should take seconds, not minutes. He never discovered the answer.

The car door slid open to reveal another corridor, narrower than the one below. To the right it came to an end twenty yards away where a large circular window allowed the sunlight to enter. Little decided that they must be above the level of the outer wall, since no openings had been visible in it. The wall at this level must be set back some distance, so as to be invisible from a point on the ground near the building.

The party was herded in the opposite direction toward several doors which opened from the hallway. Through a number of these, light even brighter than the daylight was streaming; from others, there emerged only the sound of human voices. The party paused at one of the brightly lighted doorways, and the Vegan turned to Little.

"These are our quarters," telegraphed the creature. "They have permitted us to set up everything we needed for comfort. I would invite you to enter, but you should first find some means of protecting your skin against the ultra-violet radiators we have arranged. Dark goggles, such as Earthmen usually wear on Vega Five, would also be advisable. I shall tell my friends about you; we will converse again whenever possible. If my ears do not deceive me, your people are quartered along this same corridor, so we can meet freely—as you guessed we might. Farewell." The bulky form turned away and hitched itself through the blue-lit entrance.

The creature's auditory organs had not lied; the human crew was found occupying a dozen of the less strongly illuminated rooms along the corridor. Magill, who as quartermaster was senior officer present, had taken charge and had already begun to organize the group when Little and his companions

arrived. One chamber had already been set aside as a storeroom and kitchen, and the food was already being placed therein. When the quartermaster caught sight of Little, he wasted no time in greetings.

"Doctor, I seem to recall that the Vegan said we could make several trips for supplies, if necessary. I wish you'd take a dozen men, try to make these creatures understand what you want, and bring up the rest of the food. Also, Denham wants that stove—he promises a regular meal half an hour after you get it here. Can do?" Little nodded; and the officer told off a dozen men to go with him. The group retraced their steps to the elevator.

Several of the pentapods were loitering at this end of the corridor. They made no objection as the doctor investigated the control beside the elevator door, and finally manipulated it; but two of them entered the car with Little and half of his crew, and accompanied them to the ground level. Little obtained one more bit of information as they started down: the elevator controls were like those of an Earthly automatic car, simply a row of buttons. He indicated the lowest, and made a motion as though to push it, meanwhile looking at one of the guards. This creature came over beside him, and with one of its tendrils touched a stud less than a third of the way down the panel. Little smiled. Evidently the fort was more underground than above, and must be a far larger structure than he had thought. It was nice to know.

They waited at the lower level, while one of the men took the car back for the others; then, accompanied by several more of the guards, they went outside. None of the men could discover how the doors of the entrance chamber were manipulated; none of the creatures accompanying them appeared to touch a control of any sort. The piles of supplies and equipment were still in front of the gate; nothing had been touched. Squads of the pentapods were hurrying this way and that around the great ship; some were visible, clinging to nets suspended far overhead against the hull, evidently repairing, cleaning, or inspecting.

A long line of the creatures was passing continually back and forth between one of the ports of the vessel and a small gate, which the men had not previously noticed, in the wall of the fort. They were bearing large crates, which might have contained anything, and various articles of machinery. Little watched them for a moment, then turned his attention to their own supplies.

The men loaded up and returned to the elevator, into which the food was piled. One man started up with the load and the others went back to the piles. This time Little turned his attention to the stove, which the cook had demanded. It had already been worked out of its pile and was awaiting transportation. The doctor first inspected it carefully, however.

It was an extremely versatile piece of equipment. It contained a tiny iron converter of its own, but was also designed to draw power from any normal standard, if desired. Being navy equipment, it also had to be able to work without electric power, if circumstances required precautions against detection; and a tube connection at the back permitted the attachment of a hydrogen or butane tank—there was even a clamp for the tank.

Little saw a rack of three gas tanks standing by a nearby pile, and was smitten with an idea. He detached one of them and fastened it into the stove clamp which, fortunately, it fitted. Four men picked up the stove and carried it inside. The other tanks were removed from the rack and carried after it. They contained, it is needless to say, neither hydrogen nor butane. Little hoped that none of the watching guards had been present at the actual looting of the *Gomeisa*, and knew where those tanks came from. He had tried to act

normally while he had fitted the cylinder and given orders to bring the others.

The elevator had not yet returned when they reached its door. The men set their burden down. To Little's surprise, none of the guards had accompanied them—they had deduced, from the weight and clumsiness of the device the men were carrying, that watching them would be superfluous until the machine was set up. Or, at least, so reasoned the doctor. He took advantage of the opportunity to tell the men to be very careful of the cylinders they were carrying. They asked no questions, though each man had a fairly good idea of the reason for the order. They already knew that the atomic converter of the stove was in working order, and that heating gas was, therefore, superfluous.

When the elevator finally arrived, Little ordered the man who had brought it to help the others bring the rest of the food from outside. There was still a good deal of it, and it might as well be brought in, though a large supply had already accumulated in the storeroom. He finished his orders with:

"You're free to try any smuggling you want, but be careful. They already know what an ion gun looks like, and we have been told that they're very good at guessing. We don't know, of course, what articles besides weapons they don't want us to have; so be careful in taking anything you think they might object to. I'm going to take this load up." He slid the door to and pressed the top button.

The same group of guards were waiting at the top. They watched with interest as several men helped the doctor carry the stove to the room which was to serve as the kitchen. There was not too much space left, for food supplies filled all the corners. Little smiled as he saw them—it seemed as though Magill were anticipating a long stay. He was probably justified.

Denham, the cook, grinned as he saw the stove. He had cleared a narrow space for it and fussily superintended the placing. He looked at the gas tank attached to it, but before he could express any surprise, Little spoke. He kept his voice and expression normal, for several pentapods had followed the stove into the room.

"Act as if the tank were just part of the stove, Den," he said, "but use the iron burner. I assure you that the gas won't heat anything."

Denham kept his face expressionless and said, "O. K., doc. Good work." As though nothing unusual were occurring, he began digging supplies from the surrounding heaps, preparing the promised dinner. The doctor sought out Magill, who had just completed the task of assigning men to the rooms.

"Have you found out how this place is ventilated?" asked Little, as soon as he could get the quartermaster's attention.

"Hello, doc. Food in? Yes, we located the ventilators. Ceiling and floor grilles. Too small to admit a pair of human shoulders, even if we got the bars out."

"I didn't mean that, exactly. Do you know if the same system handles the rest of the building? And whether those grilles keep blowing if we open the window in a room?"

"We can find out the answer to the second, anyway. Come along."

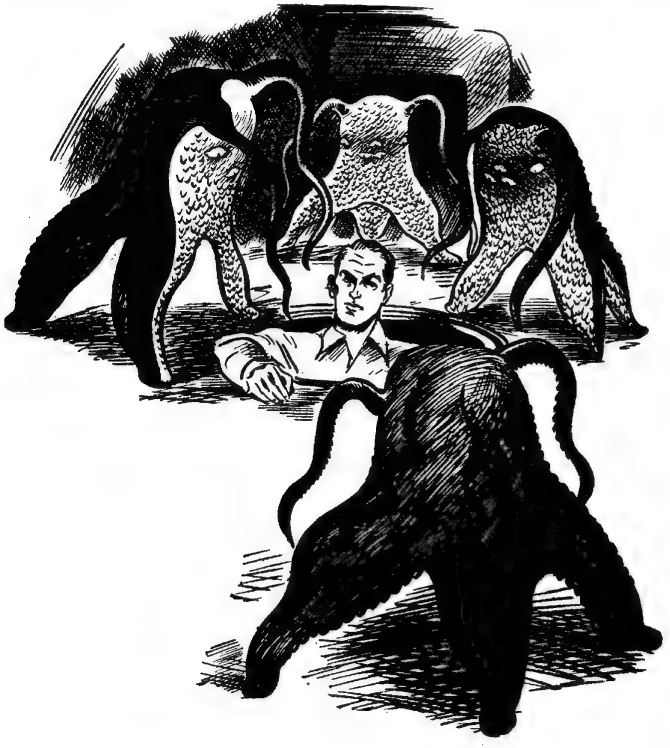
The two entered one of the rooms, which had been set aside as a sleeping room for three men. All the chambers on this side of the corridor had transparent ports opening onto the roof; after some juggling, Magill got one open. Little, standing beneath the ceiling inlet, was gratified to feel the breeze die away. He nodded slowly.

"I think we should form the habit of keeping the windows open," he remarked. "Of course, not being too pointed about it. It may get a trifle

cool at night, but we can stand that. By the way, I forgot to have the men bring up those sleeping bags; I'll tell them the next time the elevator comes up. Do you think our faithful shadows"—Little nodded toward the two pentapods standing in the doorway—"would object if we went out on the roof? They let us open the window, and we could go out that way, in a pinch. There must be some more regular exit."

"No harm in trying," replied Magill. He led the way into the corridor, the two watchers moving aside for them, and after a moment's hesitation turned left, away from the elevator. The guards fell in behind. The room they had been in was the last of those occupied by the Earthmen, and several lightless doorways were passed before the end of the passage was reached. They found it similar in arrangement to the other end, containing a large, transparent panel through which was visible a broad expanse of roof.

Magill, who had opened the window in the room, began to examine the edges of the panel. It proved openable, the control being so high above the floor as to be almost out of reach. The pen-



tapods could, without much effort, reach objects eight feet in the air. The quartermaster, with a little fumbling, finally released the catch and pushed the panel open.

The guards made no objection as the men went out on the roof, merely following a few yards behind. This end of the hall opened to the southeast—calling the sunrise point east—away from the ship. From a position a few yards outside the panel, it was evident that the prison quarters occupied a relatively small, rectangular pimple near the north corner of the half-mile-square roof. The men turned left again and passed along the side of the protuberance. Some of the crew saw them through the windows, which Magill beckoned them to open. Denham had already opened his, and cooking odors were beginning to pour forth.

Crossing the few yards to the five-foot parapet at the edge of the roof, the men found a series of steps which raised them sufficiently to lean over the two-foot-thick wall. They were facing the forest to which Albee and the others who had escaped had made their dash. From this height they could see down the declivity at its edge, and perceive that a heavy growth of underbrush was present, which would probably seriously impede travel. No sign of the refugees caught the eye.

The bow of the ship protruded from behind the near corner of the structure. Little and Magill moved to this wall and looked down. The line of pentapods was still carrying supplies to the vast ship, whose hull towered well above the level of the two watchers. It hid everything that lay to the northwest. After a few minutes' gaze the officers turned back to the quarters. They were now at the "elevator" end of the superstructure, and found themselves facing the panel which had not yet been opened. Two of the men were visible, watching them from within; and Magill, walking over to the entrance, pointed out the catch which permitted it to open. No outside control was visible.

"The men have come with the rest of the food, sir," said one as soon as the panel opened, "and Denham says that dinner is nearly ready."

"We'll be in shortly," said the quartermaster. "You may tell the men they are free to come out and explore, if they wish."

"I would still like to know if the ventilator intake is on this roof," remarked Little as they walked on. "It must be somewhere, and the wall we saw was perfectly smooth. There doesn't seem to be anything out in the middle of this place, so if it's anywhere, it must be hiding in the shadow of the parapet. Can you see any irregularities near the edges?"

"No," said Magill after straining his eyes in every direction. "I can't. But we're half a mile from two of the walls, and might easily miss such a thing at a much shorter distance. If it's here, one of the men will find it sooner or later. Why do you worry about it, if you want us to use outdoor air directly?"

"I thought it might be a useful item of knowledge," replied Little. "I succeeded in smuggling up my three remaining cylinders of gelctane, disguised as part of the stove. I don't suppose there's enough to put the whole garrison out—but still, it would be nice to know their ventilating system."

"Good job, doctor. After we eat we'll find out what else, if anything, the boys succeeded in bringing up, and more or less take inventory. Then perhaps we can arrange some plan for getting out of here. I wish we knew what has become of the *Gomeisa;* I don't suppose we could manage the controls on that ship outside." Magill made this remark with such perfect seriousness that Little was forced to grin.

"You may be a little optimistic, Keys. Remember the Vegans, who are far from stupid creatures, have been here

for some time and have failed to get to first base to date."

"They are handicapped physically, doc. They can't live for long outside without supplementary ultraviolet sources, and they have to plan with that in mind. Furthermore, this gravity is nearly twice that of Vega Five, and they can't move at any rate better than a crawl."

Little was forced to admit the justice of this argument, but remained, in Magill's opinion, pessimistic. He had developed a healthy respect for their captors, along with a slight comprehension of their motives. The trouble was, the Vegan's description of the way the pentapods seemed to guess the purpose of a device before it was completed did not tie in very well with his theory concerning those motives. More thought was indicated. He indulged in it while Magill steered him back to the prison and dinner.

The meal was good. There was no reason why it shouldn't be, of course, since the cook had all the usual supplies and equipment; but Little was slightly surprised to find himself enjoying dinner while in durance vile as much as if he were on his own ship. It didn't seem natural. They ate in the hallway, squatted in a circle in front of the kitchen door. The Vegans, whose quarters were directly opposite, watched from their doorways. They also commented from time to time, but were very seldom answered, since both hands are required to speak Vegan. They would probably have felt slighted if one of them—not the one who had acted as interpreter—had not understood some English. He got about two words in every five, and succeeded in keeping his race in the conversation.

The meal concluded, the meeting of the ways and means committee, which consisted of all human beings and Vegans in the neighborhood, was immediately called to order. The presence of nonmembers, though resented, was perforce permitted, and discussion began under the watchful eyes of eight or ten pentapods. Little, rather than Magill, presided.

"The first thing we need to know," he said, "is everything possible about our five-sided friends. The Vegans have been with them longer, and probably know more than we; but owing to the relative slowness of their speech, we will save their contribution until last. You who understand English may translate the substance of our discussion to your fellows if you wish, but we will hold a second meeting afterward and go over everything in your own language. First, then, will anyone who succeeded in smuggling any weapons or probable-contraband tools up here please report? Keep your hands in your pockets and your eyes on me while you do so; there is a high order of probability that our friends are very good at interpreting gestures—even human gestures."

A man directly across the circle from Little raised a hand. The doctor nodded to him.

"When we were loading food, before we made that break, I dropped my testing kit into my pack first of all. I didn't try to cover it up and I concentrated on boxed articles of food afterward to make it look natural." The speaker was one of Goldthwaite's assistants, a tall fellow with the insignia of a technician's mate. Little knew him fairly well. He had been born on Earth but showed plainly a background of several generations on the colony-planet Regulus Six—big bones, dark skin, quick reactions.

"Good work, Dennis. What is in the kit?"

"Pliers, volt-ammeter, about sixty feet of assorted sizes of silver wire, two-thousand-line grating, midget atomic wire-welder, six plano-convex lenses of various focal lengths, support rod and two mirrors to go with them, and a small stroboscope."

"Item, one portable laboratory," re-

marked Little. "Congratulations. Leo, I suppose you have outdone your brother?"

Leo Dennis, the twin brother of the first speaker, shook his head. "Just an old-fashioned manual razor. I'll start accepting offers tomorrow." Little smiled and fingered his chin.

"You're too late, unless someone brought scissors to start with. Safety razors weren't built to cope with a ten-day growth, more or less. Never mind, we may find a use for it—it's a cutting tool, anyway. Next?"

There was a pause, with everybody looking expectantly at his neighbor. Evidently the total had been reached. Little spoke again.

"Did anybody try to smuggle something and fail?"

"I tried to salvage Goldy's liquor, and had it taken from me," answered another man. "I guess they're firmly convinced it's lethal. I wish them luck in analyzing the stuff—we never could."

"How far did you get before they took it from you?"

"They let me pick up the bottles that were lying around, and put them in the case; half a dozen of them watched me while I did that. But when I started to carry the case toward the gate—of course, that was some job, as Goldy found out—they all walked up and just took it away. They didn't get violent or anything like that."

"Then it wasn't really a case of detected smuggling; you made no effort to mask your real intentions. Is that right?"

"Yes, sir. I don't quite see how any one could hide either that case or the bottles; I was just sort of hoping against hope."

Little nodded and called for more contributions. A gunner responded.

"I found a couple of cases of grenades and stuck several into my pockets. The next thing I knew, one of the starfish was holding my arms, and another taking them out again. He handled them as though he knew what they were."

"I suppose you checked the safeties before you pocketed the bombs?"

"Of course, sir."

Little nodded wearily. "Of course. And that was enough for our admittedly astute friends. I admit it's usually a very good idea to obey regulations, but there are exceptions to every rule. I think the present circumstances constitute an exception to most of them. Any others?"

Apparently no one else had seen anything he coveted sufficiently to attempt to sneak out of the piles. The doctor didn't care particularly; he believed he had enough data from that source, and an idea was rapidly growing. Unfortunately, the primary principle of that idea required him to learn even more, though not about his captors. Possibly the Vegans could supply the information, but Little was not prepared to bet on it.

Magill closed the discussion by mentioning the anæsthetic which Little had made available, and requesting an early communication of all ideas. The men withdrew into smaller groups, talking in low tones among themselves, and gradually drifted through the doors to their rooms, or out onto the roof. Magill followed to take a small group down again for the sleeping bags.

Little remained with the Vegans. He had a good deal to ask them, and material which could be covered in an hour of verbal conversation would probably take three or four hours of arm-waving. He sat just outside the fan of intense light from one of the doorways, and the creatures formed a semicircle just inside—the door was wide enough for the four of them, since it had been constructed to admit the pentapods. The doctor opened the conversation.

"How long have you been here?" was his first question. It was answered by the individual who had acted as interpreter.

"Since our arrival there have passed about two hundred of the days of this planet. We are not sure just how long they are, but we believe they are about thirty of your hours. We have no idea of the length of time that elapsed between our capture and our arrival at this place, however. We were driving a small private ship on a sightseeing trip to a world which had recently been reported near the galactic center by one of our official exploring vessels, and were near its reported position when we were taken. They simply engulfed us—moved up and dragged our ship into a cargo lock with magnets. We were on their ship a long time before they put us off here and left again, and we were not allowed to obtain any of our belongings except food and ultraviolet lamps until we arrived; so we don't know how long the trip lasted. One of us"—the Vegan indicated the individual—"got up courage enough to venture onto the roof one night and saw what he thinks was the Galaxy; so we believe this world lies in the Cloud. You will be able to tell better for yourselves—you can stand the dark longer than we, and your eyes are better at locating faint details."

"You may be right. We were heading toward the Cloud when we were taken," answered Little. "How freely have you been permitted to move about this fort?"

"We may go almost anywhere above ground level," was the answer. "Some of these watchers"—a supple antenna gestured toward the ever-present guards—"are always with us, and they prevent us from taking the elevators any lower. Then there are a few rooms on the upper levels which are always sealed, and two or three which are open but whose thresholds we are not permitted to cross."

"How do they prevent your entering?"

"They simply get in front of us, and push us back if we persist. They have never used violence on us. They never need to; we are in no position to dispute their wishes. There is no comparison between them and us physically, and we are very much out of our natural environment."

"Have you been able to deduce the nature or purpose of the rooms from which you are barred?"

"We assume that they are control rooms, communication offices, or chart rooms. One of them contains several devices which look like ordinary television screens. Whether they are for long-range use or are merely part of a local system, of course we cannot tell." Little pondered for several moments before speaking again.

"You mentioned constructing several devices to aid in escape, only to have them taken away from you just before they were completed. Could you give me more details on just what happened? What were you doing, and at what stage were you interrupted? How did you expect to get away from the planet?"

"We did not expect to get away. We just wanted to make them go, so we could take over the fort. When we disconnected their tube lights to put in our own, he"—indicating the creature beside him—"managed to retain a sample of the tube. On its walls were absorbed layers of several gases, but neon was the chief component. We had smuggled in the neutrino converters and stabilizers from our ship"—and Keys said these fellows were helpless, thought Little—"and it occurred to us that we might set up a neon-oxygen reaction which would flood the place with ultraviolet. We had already noticed that they could not stand it any better than you. The half life of the process would have been of the order of twelve hours, which should have driven them out for a period of time ample for our purpose. A neutrino jet of very moderate power, correctly tuned, could easily have catalyzed such a reaction in every light tube in the place. We had built the projector, disguising

it as another ultraviolet lamp, and were connecting the converter when about fifty of the guards dived in, took the whole thing away, and ran out before the lamps we already had going could hurt them."

Little heroically forbore to ask the creatures why they had not smuggled in their ship while they were about it and flown away. The Vegans wouldn't have appreciated the humor.

"I believe I understand the purpose the actions of these creatures," he said. "But some of their characteristics still puzzle me. Their teamwork is perfect, better than that of well-trained human fighters, but if my idea is correct their technical knowledge is inferior to ours. I have already mentioned to my captain their apparent lack of conceit—that is also based on my guess as to their motives in capturing us. One thing, however, I do not understand at all. How do they communicate? I have always been reluctant to fall back on the 'explanation' of telepathy; there are reasons which make me doubt that it can ever be a satisfactory substitute for a language."

The Vegans looked at him for a moment, astonishment reflected in the tenseness of their antennae.

"You do not see how they talk?" signaled one at length. "That is the first and only thing we have been able to appreciate in their entire make-up."

Little leaned forward. "Explain, please," he waved tensely. "That may be the most important thing any of us has yet ascertained."

The Vegans explained at length. Great length. The recital was stretched out by Little's frequent questions, and once or twice delayed by his imperfect comprehension of the Vegan language. The sun was low in the west when the conversation ended, but the doctor had at last what he believed to be a complete mental picture of the habits, thoughts, and nature of the pentapods, and he had more than the glimmerings of a plan which might set the human and Vegan prisoners free once more. He hoped.

He left his nonhuman allies, and sought out Magill. He found him at the western corner of the roof, examining the landscape visible beyond the tail of the spaceship. A couple of pentapods were on hand, as usual. Leo Dennis was making himself useful, sketching the western skyline on a pad he carried, with the apparent intention of marking the sunset point. Magill had evidently decided that an assistant navigator should be able to get his own location on a planet's surface as well as in space. Dennis was slightly handicapped by a total lack of instruments, but was doing his best. Little approached the quartermaster.

"Has anything new turned up, Keys?"

The officer shook his head without turning. "The men are all over the roof, to see if there are any ventilator intakes or anything else. One of them pointed out that the lack of superstructure suggested that the roof might be used as a landing place for atmosphere craft, and found some blast marks to back up the idea. No one else has made any worth-while reports. If there are any aircraft, though, I'd like to know where they stow them."

"It might help, though I hope we won't be driven to using them. I suppose the boys have their eyes open for large, probably level-set trapdoors in the roof. But what I wanted to find out was: with whom am I sharing a room?"

"Don't recall, offhand," replied Magill. "It doesn't matter greatly. If there is any one in particular you want—or don't want—to be with, you're at liberty to trade with someone. I told the boys that."

"Thanks. I want to spend some time with the Dennis boys, without making it too obvious. I suppose they're already together. By the way, seeing I'm still a medical officer, has anyone reported sick? The air is just a shade

on the thin side, and we've been breathing it long enough for effects to show, if there are going to be any."

Magill shook his head negatively, and Little strolled over to Leo, who had completed his sketch and was trying to mark the position of the sun at five-minute intervals. He was wearing one of the few watches possessed by the party. He was perfectly willing to have his erstwhile roommate replaced by the doctor, especially when Little promised work to be done. He agreed to speak to his brother and to Cauley, who had originally been assigned to their room.

"Tell Arthur to bring his pack, with the kit he sneaked along," added the doctor. "We will probably have use for it." Leo nodded, grinning, and resumed his attempts to fix the position of an object, much too bright to view directly, which had an angular breadth on the order of half a degree. He didn't appear discouraged yet.

Little wandered off across the roof, occasionally meeting and speaking to one of the men. Morale seemed to be good, he noted with relief. He had always considered that to be part of the business of a medical officer, since it was, after all, directly reflected in the health of the men.

A motion in the direction of the setting sun caught his eye. He turned to face it and saw a narrow, dazzling crescent low in the western sky, a crescent that rose and grew broader as he watched. The planet had a satellite, like Mars, so close that its period of revolution was less than one of its own days. Little wondered if a body so close to the planet might not prove useful. He filed the thought away for future reference.

The sun set as he watched, and he realized he had been right about the thinness of the air. Darkness shut down almost at once. The moon sprang into brilliance—brilliance that was deceptive, for details on the landscape were almost impossible to make out. Stars, scattered at random over the sky, began to appear; and as the last traces of daylight faded away, there became visible, at first hazily and then clear and definite, the ghostly shape of the Galaxy. Its sprawling spiral arms stretched across a quarter of the sky, the bulk of the system inclined some thirty degrees from the edge-on position—just enough to show off the tracing of the great lanes of dust that divided the arms.

The men began to drift toward the orange glow that shone through the entrance panels and windows of the "penthouse!" They were greeted by the whistle of Denham, who had just completed preparation of another meal. It was eaten as the first had been, in the corridor with a silent audience of guards. The men had grown used to the creatures, and were no longer bothered by their presence. The conversation was desultory, except when Arthur Dennis offered to take the place of Denham's helper for the evening. It was the most plausible excuse for entering the kitchen-storeroom, where the packs had been stowed. No one commented, though everybody guessed the reason.

Windows and doors of all rooms were left open, the first because of Little's advice, the second because the pentapods had removed all means of closing the entrances—privacy was impossible, which did not in the least surprise Little. At the conclusion of the meal, he accompanied Leo Dennis to the latter's room, which was near the end of the corridor farthest from the elevator, and waited for the arrival of Arthur. A little investigation solved the secret of turning out the room's tube lights, which darkened the place somewhat, but the light from the corridor was sufficient to move around by.

Arthur entered after about fifteen minutes, carrying three packs under his arms. Two of these he tossed to his brother and the doctor, remarking,

"Pillows in one suite, anyway!" The other he retained. The three men rolled up the packs and placed them under the canvas at the heads of their sleeping bags, conscious meanwhile of the never-ending scrutiny from the door; then they leaned back against the wall and relaxed.

The twins had tobacco, and all three smoked as they talked. A remark of Leo's, which opened the conversation, eased Little's mind of one problem which had been bothering him.

"Before we do or say anything else, doc," said the navigator, "please think carefully before you tell us anything. I suppose you found out a good deal from the Vegans, and I wouldn't be surprised to know you have a campaign all mapped out; but I don't want to know more than necessary. I have developed, from what the Vegans said and from what I've seen myself, a very healthy respect for the intuition, or guessing powers, or whatever it is, of our silent watchers. It makes me uncomfortable. And the less I know the more natural I can let myself act. All right?"

"All right; that was my own idea, too," answered the doctor. "I will tell you no more than necessary. In the first place I should, like Magill, like to know our location on this planet and the planet's location in space. That, unquestionably, is your job, Leo. Then I want to get the information to the handiest United base or ship. That's all. I don't believe we could break out of here, though probably Keys will try. I pin my hope on our broadcasting a message from inside and letting people already outside do the rest."

The brothers nodded. "That's clear enough," said Leo, "and I can probably locate us fairly well if . . . Art, did you say you had a grating in that kit of yours?"

"Yes," was the answer. "Do you need it?"

"Uncertain, but probably. I'll have to identify the local navigation beacon somehow, and its spectrum will be the most outstanding hallmark. Why don't doc and I go outside now and do some star-gazing, while you curl up in your sleeping bag and see if the shadows don't follow us? If they do, you can rummage in the kit without being seen, and come out in a few minutes with the grating and a couple of the lenses you mentioned. If they don't, we'll do what we can with the naked eye and come back. Sound?"

"Solid. Be seeing you."

Arthur extinguished the stub of his cigarette, loosened his belt and shirt, and began removing his boots, while Leo and Little rose and went out into the hallway. Pentapods, scattered along the corridor, eyed them as they emerged, but made no move to intercept them. The door opening outside had been left ajar by the Earthmen in their policy of avoiding the use of the building's ventilation system, and the guards were evidently following a policy of noninterference with regard to everything but weapons. The panel was still partly open.

Little pushed it wide, and the two human beings went out onto the roof. To their surprise they were not followed; but both realized that there might already be guards on the roof. They moved out of the path of the light from the door and approached the nearest wall.

The mountains to the northeast were silhouetted against the almost equally dark sky; the forest at their feet was indistinguishable. No glow or spark of light suggested the presence, anywhere in the scene, of the men who had escaped nine hours before, though Little and Dennis strained their eyes looking. Not even a reflection from the river the doctor believed must be present broke the dark expanse.

The sky offered more material for comment. The Galaxy was lower in the west and the moon higher. Dennis, looking at the latter, did some rapid

mental arithmetic. It had risen about an hour and a half ago, and would probably reach the zenith in a little more than another hour. Its siderial period, then, must be about eight hours, and its distance, if this world had the same size and mass as Earth, a little over eight thousand miles from the surface. It was now nearly at "first quarter," but its dark side was faintly visible, presumably illuminated by the reflected light of the planet. Somewhat less than four hours after sunset, the satellite should enter the planet's shadow and be eclipsed for about forty minutes, unless its orbit were more highly inclined to that of the planet than appeared to be the case.

Little was looking at the stars, spread over the sky in unfamiliar constellations. "Which of these is the local navigation beacon, and how do you you identify it?" he asked. "And why do you pick out one star to call a beacon?"

It would be possible to obtain our position from any three stars whose location is on the charts," answered Dennis, "but it is much easier, as a rule, to use certain individuals, because tables have been computed for use with them, and they are easier to identify. I don't have the tables with me, of course, but the beacon for this neighborhood and the Galaxy, together, would give me a fairly good idea. We use the brightest available stars for beacons, naturally—Rigel and Deneb in the Solar sector, for example. For navigation in the Larger Cloud we use a slightly different system, which employs two super-giant stars back in the Galaxy and the one local beacon which covers the whole Cloud—S Doradus. It shouldn't be hard to find, even without instruments, since it's a first-magnitude star at a thousand parsecs; but we always like to check the spectrum, if possible. Most beacon stars, of course, are O, B, or M supergiants, but there are usually detectable individual differences which can be picked out by a good instrument. We haven't a good instrument but fortunately S Doradus has a very distinctive spectrum.

Little nodded. "I can see that much. Don't tell me how you reduce the observations to get your position; it would certainly go beyond my mathematical limit, and I don't like to be shown up."

"It's not difficult—elementary spherical trig. If you know what a direction cosine is, you're all right. Matter of fact, that's how positions are indicated —three direction cosines from a given beacon, plus distance. I don't know how we'll get the distance—I can estimate brightness to a tenth of a magnitude, but that may answer to a small percentage of an awful distance. We usually can triangulate, but not in the Cloud."

"I'll take your word for it," replied the doctor. "Can you see anything that might be your beacon?"

"There's a fairly bright specimen sitting just above the north horizon, that seems to have a tinge of yellow; and there's another right overhead. If Art ever gets here with the lenses and grating I'll test them. I suppose he can't make it, since the dumb chums didn't follow us out here and give him a chance to burrow into the kit."

"He may find a way to do it, anyway," remarked the doctor.

"It would be just like him to try, and lose the kit," was the pessimistic answer.

Even Little was growing discouraged by the time Arthur finally arrived. They had been out nearly an hour, Little amusing himself by strolling along the walls to see whether anything were visible below, and Leo observing the satellite as it approached the zenith. He had already come to the conclusion, from the fact that the sun had set practically "straight down," that they were near the equator of the planet. It now seemed that the moon was in the equatorial plane, since it was rising to a point directly overhead. It was well past first quarter now, but the unlighted

crescent was still visible. Leo had just noticed this fact when Arthur's voice interrupted his pondering.

"I assumed you wanted the lenses for a telescope of sorts, and chose accordingly," said the technician. "It took me a long time to work the kit out of the pack and into the sleeping bag because the guards were looking in every two or three minutes. I don't know what will happen when they find me gone."

"I do, you chump," answered Leo. "Two or three of them will drift out here after us, and some more will seize the chance to investigate the pack whose position you changed so often."

"Think so?" asked Arthur. "Here are the lenses and grating. I brought

the rod and lens clamps, too, but I'm afraid you'll have to get along without a tube." His brother accepted the assortment and fell to work. The doctor looked on silently. Arthur had brought a light also, and held it on the step which served as a workbench.

Leo, after a moment's thought, discarded one lens and used the other—the one of longer focal length. He clamped this at one end of the rod, with the plane side toward the center. The grating was smaller than the lens, and he clamped it against the plane face of the latter with the excess glass blocked off with paper. Another sheet of paper—a leaf torn from his sketch pad—was clamped to the rod at the focal distance of the lens, completing the crude spectroscope.

He set the instrument on the wall, propping it so that it was pointed toward the northern horizon and one of the stars he had mentioned. He leaned over it, to cut off the moonlight. The other two also leaned forward to see the results.

A little streak of color, narrow as a pencil line, was just visible on the paper screen. Leo brought his eyes as close as he could, striving to perceive the tiny dark gaps that should have existed; but the resolution of the instrument was not sufficient. After a moment's pause, he returned to the original idea, removing the paper and clamping the other lens in normal eyepiece position. This proved successful. He could make out enough to identify both the stars he had counted on as unquestionably sun-type G stars, probably no more than a few parsecs distant, and definitely not the giant he sought.

The navigator began to wear a worried expression. There were several thousand stars visible to the naked eye, and only a few of them were obviously not the object of his search. After a few minutes, however, he began a methodical examination of all the brighter yellow and white stars, one after another. Arthur and the doctor saw that interruption would not be helpful, so they withdrew a few yards and conversed in low tones.

"What will you do if Leo does get our position?" asked the technician. "I suppose you have some idea."

"The idea I have depends almost entirely on you," answered Little. "I have been told that a second-order transmitter is less complicated than an ordinary radio. Could you build one?"

Dennis frowned and hesitated. "If I had all the materials and no interruptions, yes. Here and now, I don't know if the necessary equipment is available, and I'm reasonably sure we wouldn't be allowed to do it, anyway."

"You said there were two atomic tools in your kit, a heater and a stroboscope," said Little. "Would their parts be enough?" Once again Dennis paused to think.

"The welder wouldn't—it's just a converter and a tungsten element. The stroboscope converts with a direct electron current and a variable oscillator and—I believe it could be done. But it wouldn't handle much power, and the range would be nothing to speak of."

"That doesn't matter, as I see it. All I want to know is that you can build a vision transmitter with the material on hand—"

"Wait a minute!" interrupted Arthur. "I didn't say a vision unit. What do you need that for? All I was counting on was voice transmission. That won't be very difficult."

Little shook his head. "Vision or nothing. I don't want to tell you why, for the reason Leo gave. But please, if you don't want me to have to redesign the whole plan, find a way to construct a vision transmitter. And I hate to be too exacting, but I'd like it done before that ship leaves again. I don't know how long they usually stay here, but I notice they're stocking up."

"Sure," groaned Dennis. "Right away. Doc, if it were anyone else I'd

know he was crazy, but with you it's only a strong suspicion. I'll try—but Lord knows where I can come by an icon tube."

Little grinned invisibly in the darkness. "The Vegans said they smuggled up a complete neutrino assembly. It was taken away from them later, but it gives you an idea of what can be done."

"They didn't give you an idea of their technique, I suppose? I'm not too proud to learn."

"I didn't ask them. There were guards around. Good luck!"

Little went back to Leo, who was resting his arms. Not a single O class spectrum had yet been picked up by the instrument.

"If I were sure it were there, I wouldn't mind so much," he said, wiping his forehead. "But it's just as likely to be in the daylight half of the sky. I'd rather not have to wait here half of whatever time it takes this world to amble around its sun, just to get a rough idea of where I am."

Little nodded sympathetically—after all, he was the one who wanted their location. "Does the moonlight interfere any?" he asked.

"It did, until I made a rough tube out of paper. It's a little hard to hold together. But speaking of the moon, doc, have you noticed anything strange about it?"

"I wouldn't," answered Little. "Is something wrong? It looks natural to me."

"It doesn't to me. It did right after sunset, when it was a narrow crescent. We could see the rest of it then, but reflection from this planet could have accounted for that. But it doesn't now! The darn thing's nearly full, and you can still see the strip that the sun doesn't reach. This world can't possibly reflect enough light for that. What's lighting it up?"

"I'm afraid it's no use to ask me," said the doctor. "I can guarantee it's not radioactivity, because that much radioactive matter so close would have prevented the existence of life on this world. It would have been burned sterile; we'd probably be dead now ourselves. I don't know any astronomy, but I can tell you all you want to know about gamma-ray burns."

"That occurred to me, too," agreed Leo. "It seems that there must be something, at present invisible to us, shining on that satellite. I think in a few minutes we'll be able to get an idea of where it's shining from, too."

"How?" asked Little and Arthur with one voice.

"The moon should pass into this planet's shadow very shortly," answered Leo. "A lunar eclipse. The satellite must have one every revolution—almost four times a day, I should say. The sun's light will be cut off, except for the fraction scattered by the atmosphere of this world, and we should be able to tell from the shape of the part illuminated by this mystery source, the direction of the source. We'll wait." The other two nodded. Even Little, who was no astronomer, understood the mechanism of an eclipse. The three settled themselves on the broad steps inside the wall.

They had not long to wait. It was about three and a quarter hours after sunset, and the first outlying tentacles of the looming Galaxy were just dipping below the western horizon, when Leo marked the first darkening of the eastern limb of the nearly full moon. It was not like the protracted lunar eclipse of Earth; the satellite was moving far more swiftly, and took less than a minute to travel its own diameter. There was a feeble, preliminary reddening as it plunged into the region illuminated only by air-scattered light; then this was gone, as the little body passed on into the umbra of the planet's shadow.

It should have disappeared. No possible reflection from the planet it circled could have given it a touch of illumina-

tion, for it looked down only on the night side of the world. Yet part of it was still to be seen—a ghostly, dim-lit crescent, a little less than half full, its convex side facing *east*. There was no possible question of the nature of the light source. Leo estimated the distance of the moon above the eastern horizon, and the angular breadth of illuminated surface; there was only a small difference.

"It will rise before long," he said. "I'm staying to see. You fellows can go back to sleep if you wish; we've been out over two hours and we'll need some sleep."

"We'll stay," said Little. "This gets interesting. Do you think there's another, very bright, moon? Large enough, perhaps, to be habitable?"

Leo shook his head. "I don't believe any possible moon could do that," he said. Arthur nodded in silent agreement, and for many minutes the three sat without speaking as the dimly lit crescent dipped lower toward the eastern horizon. Leo had judged roughly that the eclipse should last about forty minutes.

It had not ended when Arthur pointed silently to the east. A spur of the mountain range whose principal peaks lay to the northeast had become a little clearer, silhouetted against a suddenly brighter patch of sky. The brilliance grew and spread, paling the stars in that quarter of the heavens as though dawn were breaking; and quite suddenly the source rode clear of the concealing hill and presented itself to view. The undulations of the landscape were abruptly visible, standing out against the long shadows cast by the light of the newcomer, which hung, far brighter than the moon at its best, just above the peaks.

The men looked on in awe. They had seen the mad splendor of the spiraling gas streams hurled forth from binaries like Beta Lyrae; they had driven through the hearts of globular clusters, with giant suns by the myriad on every hand; but somehow the lonely, majestic grandeur of this object was more impressive. A star—too distant to show a perceptible disk—too bright to be gazed at directly, putting to shame the surrounding celestial objects. Even the moon, sliding out of the shadow in an apologetic fashion, no longer seemed bright.

Arthur Dennis was the first to speak. "It gets you, doesn't it? I suppose it's a companion to the sun, or else—"

"Or *else*," said Leo flatly, snatching the spectroscope. The great star was white, with just a suspicion of topaz in its glow, and Leo was prone to jump to conclusions. One glance through the instrument, sweeping it slightly from left to right, was enough. He grinned, removed the eye lens, and replaced the paper screen of the original arrangement, and three heads bent once more to look at the streak of color.

It wasn't a streak this time. A single bright point centered itself directly behind the objective lens, and to either side of this there extended a broken series of dashes—the intense emission bands, bordered on the violet side by relatively sharp dark lines, which characterize what the early astronomers called a "P Cygni" star. The continuous background spectrum was too faint to show; the grating was so coarse that several orders of the spectrum fell on the paper at once.

"And that's your beacon!" remarked Little after a few moments of silence. "Well, it certainly earns the name."

"You can get our location now?" asked Arthur. I should think you wouldn't need to say much but 'Near S Doradus,' from the looks of that thing."

"Wrong, blast it," answered Leo. "When I said I could judge brightness to a tenth of a magnitude, I was thinking of decent stars with visual mags between zero and plus six. For this thing, I don't know whether it's minus five or minus fifteen—whether the blasted thing is three quarters of a parsec

or eighty parsecs away. I'll get the direction, though, and maybe I'll find a way to measure the brightness. I'll look after that; you people worry about what to do with it if I get it. Good night."

The dismissal was rather pointed, and Leo turned his full attention to the pad on which he was computing, so Little and Arthur silently retired. So did all but one of the guards who had been watching, invisible in the shadow of the superstructure.

Dr. Little opened his eyes with a start and realized it was full daylight. It had been the first sleep under normal gravity in several weeks, and his body had made the most of it. The other two sleeping bags were empty, but the Dennis brothers were both present. They were by the window, removing a piece of canvas that had apparently been draped across it. Little sat up.

"What are you fellows up to now?" he asked. "Leo, don't you ever sleep?"

"Sure, when necessary. You have been sleeping for twelve hours, doc. Did we wake you up?"

"Twelve hours! No, it was probably my conscience. What's the idea of window curtains? We haven't even a door, so it can't be privacy."

"We were screening out the sunlight Leo didn't want," answered Arthur. "He was trying to get the sun's spectrum, and just wanted a narrow beam through the grating."

"Did you get it?"

"Sure." It was Leo speaking again. "And we found a use for the razor. The edges of the blades are good for making a slit for the beam. This fellow, of course, didn't have anything in that wonderful testing kit that would do. By the way, Art, have you still got the kit, or did our friends take it last night?"

"Someone poked around in it," Arthur answered, "but they left it here. Maybe they thought there was nothing in it that we could put to use."

"I think they would have left it, anyway," remarked the doctor, grinning at the expressions of unbelief on the two faces.

Leo walked over to his brother's sleeping bag and took the kit box from the pack. "You know best, doc. In that case, I'm going to have a look, and find out if there's anything useful that Art forgot to mention— Art, you dope!"

"What's wrong now?" asked the technician, without moving.

"The welder and the stroboscope you spoke of—they're gone! And you said the guards must have decided the stuff was harmless. What do we do now?"

"The welder and stroboscope are in my pockets, and have been since last night. You thought of the stuff's being taken, didn't you? And did you *ever* think of anything without my beating you to it? You worry about your own department; I can take care of mine, I hope." The last phrase was stimulated by an amused glance from the doctor.

They strolled out into the mixed crowd of humans and pentapods in the corridor, and Arthur went over to the kitchen. He appeared to have taken on permanently the job of cook's helper. Little located the quartermaster, and began discussing the day's possibilities. They seemed to be few. Most of the crew were specialists of one sort or another, experts in the fields of knowledge and activity necessary to fly and fight an interstellar cruiser; but one and all were hampered by lack of materials and tools. The only way to get these appeared to be theft, at which the crew of the *Gomeisa* were not specialists. The only advice Little could give was that the men should do their best to smuggle in materials, to the exclusion of other occupations, and any one who had a workable idea should let the others know what he needed to work it. Not very helpful, since everybody already had that idea. It looked as though time would pass rather boringly.

It did. The men wandered more or less freely about the roof and the corridors of the building below, and occasionally went out to the supply piles for material they wanted. To Magill's surprise, but not to Little's, they were allowed to take even pieces of scientific apparatus without interference.

"I don't get it," said the quartermaster when a man reported bringing in a portable atomic melting furnace. "Anyone could see that that was a dangerous tool in the hands of a prisoner. Why do they let us get away with it?"

"To me," answered Little, "that is the least puzzling factor. The treatment we are getting shows that there can be only one reason for our capture —to learn from us. Naturally, we must be allowed access to tools and scientific equipment. Then they watch our efforts to escape, and help themselves to the results of our labor. What is so puzzling about that?"

Magill was silent for several minutes. "Put that way," he said at last, "it's obvious. I don't know why I didn't think of it before. That, I suppose, is why you said they weren't a conceited race—they go to such lengths to take the knowledge of others. But what happens if they're a little slow in taking a weapon away from us?"

"Apparently they are prepared to take that risk. They have succeeded so far with the Vegans, and they have all our standard weapons, you'll note. That ability of theirs to guess the purpose of our actions is our chief bugbear. It's unusual; most of the time it's almost impossible for two races meeting for the first time to understand even each other's standard gestures, let alone natural, unstereotyped face and body motions. But do your best with that in mind."

Little did not say that, with the aid of the information given by the Vegans, he had been able to deduce the reason for the almost telepathic guessing ability of the pentapods; and he did not mention the plan that he and the Dennis brothers were trying to put into operation. If Magill went ahead with ideas of his own, it would probably occupy much of the attention of their guards. Not that Little wanted it *all* occupied.

The reports of the men who had wandered through the building agreed with the statements of the Vegans—most places were permitted, below ground was not, some rooms were locked, and some were open but the men had been kept out. One room, on the top floor almost directly below the prison quarters, appeared to be a communications office—which was a natural situation, if the roof had originally been used as a landing platform. The purpose of most of the others was not clear. Little did some wandering himself, and personally checked most of the information.

That evening the Vegans ate with the men; their own supplies had given out long before, of course, and they had been living on food supplied by the pentapods. It was evidently harmless, but far from enjoyable, according to the Vegans. Arthur Dennis served the food to them at their doorway, and brought the mess kits back to the kitchen after the meal. The guards usually withdrew some distance while the men were eating; the odors evidently did not appeal to them. Consequently, there was none of the creatures in the kitchen when Arthur brought back the kit. His self-assigned position as cook's helper was becoming constantly more useful, he reflected.

Days in prison tend to be rather boring. Nights are better because one can sleep and forget the boredom for a while; but from this night on Arthur Dennis knew he would sleep very little, though he planned to trade his sleeping bag for one several sizes larger and retire completely into it. He decided to develop the habit of keeping his face partly covered by the canvas flap, and have his companions emulate him to make the action seem more natural.

He was jubilant when the others came to the room.

"I have an icon tube, doc," he said from the depths of the sleeping bag. "That's what worried me most. I can build the second-order converter from the stuff I already had, and I can probably dig up enough from the other boys to make the tube connections. It's lucky they let us keep the hand lights. I don't know how I'd put this stuff together in the dark."

"How did you get the tube?" asked Little. "I didn't see you go downstairs all day, and I don't think many of the men knew about the guards' having let a good deal of apparatus by without trouble, so they wouldn't have done it for you."

Arthur grinned in the darkness. "Since I didn't have the Vegan technique we mentioned, I bet one of the Vegans fifty Union credits it couldn't be done—thus implying my doubt of his story of smuggling up a neutrino unit. He slipped it into his mess kit this evening after the meal, and I got it in the kitchen. He was a little touchy about my rudeness, but I apologized this evening and he's cooled off. I pay the bet if and when we reach a Union planet and can get some money." The technician ceased speaking, and the flap fell again across the opening of the bag.

Silence fell throughout the room, broken by the even breathing of two people and the occasional almost inaudible footfalls of the guard outside. Once or twice a shadow fell across the doorway as one of the creatures looked in, but it defeated its own purpose by blocking the light, and saw nothing. Dennis was careful, anyway, and allowed no motion to show through the padded canvas of the sleeping bag.

He was not interrupted that night, and worked for two or three hours before placing the partly completed unit in his kit and going to sleep.

The next morning it occurred to Little that the Vegans might have some idea of the probable length of stay of the ship. After the morning meal he squatted in front of the doorway of their quarters and questioned the creatures.

"They usually remain about ten days," was the answer. "But it is impossible to tell for sure. This is the first time prisoners have been brought since we came. We didn't notice how long they stayed on our arrival—we were too worried about other things.

"How long do they remain away, usually?"

"There is no 'usually' about it; the duration is absolutely unpredictable as far as we can see. Sometimes the ship is gone for only a day, sometimes for several weeks. It is evidently not a patrol cruiser with a regular beat."

Little thanked the creature and left, to ponder the effect of the new facts on his plans. He returned almost at once, to ask another question:

"Does the garrison of the fort appear to expect the ship at any time before its actual arrival?"

"Not obviously, if at all," was the answer.

Little nodded, satisfied. He sought out the Dennis brothers. Leo was in their sleeping room, trying to manufacture a photometer from the lenses of a pair of dark goggles an atomic engineer had found in his pocket. The doctor located Arthur and brought him back to the room, and asked if either one knew anything about geletane.

"Not much," answered Leo. "I gathered that it was more than an ordinary anæsthetic when I heard you had lived through an exposure to space while under its influence."

"Right," nodded Little. "It produces, to put it crudely, suspended animation. It is adsorbed, apparently, on all the cell surfaces in the body, foreign bacteria included, and seals them from chemical influence. One would expect that to produce death, since the destruction of the gas film could not start the vital processes again; but the pa-

tient always revives. I could put my finger on ten different theses in the New York Medical Library, each suggesting a different mechanism and none completely satisfactory. The film, when it breaks, seems to do so everywhere at once, and there is an abnormal amount of carbon dioxide in the blood immediately thereafter; but the whole process is not thoroughly understood.

"It seems, however, that the cell walls themselves tend to cause the breakdown of the film; and if a person exposed to the gas is exercising violently, that action is increased to a point where he is *not affected at all.* If he holds his breath, and otherwise suspends body activity, it gets him almost instantly. The gas, as you can see, has an all-or-none nature. I wanted you to understand this, because it is possible we may have to use the gas in the near future. Think it over." The brothers kept their faces nearly expressionless, but it was perceptible that they thought the matter over with some pleasure. Arthur, slightly the more imaginative of the two, immediately assumed that the gassing was to take place when the communicator was finished, so that they would have a chance to use it.

With this pleasant prospect in mind, Arthur worked even longer that night. The converter was completed, and he began to construct a support for the tube and its connections before he was forced to sleep. Again, his work apparently went undetected by the ever-prowling guards. His hopes showed so clearly on his face the next morning that his brother kicked him firmly and ungently in the shins as a reminder of the unbelievable expression-comprehension of the pentapods.

He reported to Little that the device would probably be completed that night. The doctor nodded and said:

"Good work, Art. We probably had another week before the ship left, but this is better than I expected. As soon as Leo gets his photometer done and finds our distance from S Doradus, things should start to pop; and that should be fairly soon." In this statement Little was half right; things started happening quite soon, but they did not wait for the navigator's mate to complete his tasks.

The doctor found Leo seated on one of the steps which lined the outer wall. He was examining closely an object, consisting chiefly of several small fragments of darkened glass, which proved to be his photometer; and like his brother, he was obviously in good humor.

"All done, doc," he said on sighting Little. I can measure tonight—calibrate this thing on stars I can estimate, and then do the beacon. It's lucky I already know its absolute magnitude. What do you think are the chances of that gadget of Art's reaching a United receiver?"

Little smiled without speaking, and shrugged his shoulders. His opinion was that the question was unimportant, but it would not do to say so. He might be misunderstood. He fully believed that they would be caught the moment they attempted to start broadcasting. Without committing himself, he admonished Leo not to lose the photometer, and went in search of Magill.

To that officer he spoke earnestly for several minutes, making several requests which were granted only after persuasion. One of them had to do with the disposal of kitchen waste, and for once the doctor's interest was not in sanitation.

The rest of the day passed in as boring a fashion as had the two preceding.

Evening found the three conspirators in their room, planning the night's activities. Arthur, of course, would remain to "sleep." They found difficulty in deciding whether Little should remain with him, or accompany Leo on his astronomical expedition. If he went without an obvious purpose, the guards might wonder why he was the only

curious sightseer and why Arthur didn't go, too; if he remained, they might wonder why he behaved differently from the previous occasion, and investigate the sleepers. Even the insight Little had gained into their thought processes could throw no light on this question.

Finally, he accompanied Leo, carrying the latter's pencil and pad to provide himself with an excuse. As on the previous occasion, none of the guards followed them through the door. They took up their former station by the wall and seated themselves on the steps until S Doradus should rise. The moon was only a little past first quarter, and the beacon would not rise tonight until some two hours after the eclipse, so they had a wait of nearly four hours. They had chosen to come out early, to avoid falling asleep and missing their chance.

For the first time since their arrival on the planet, there were clouds in the sky. These provided matter for conversation and anxiety for nearly three hours as they completely covered the heavens on two occasions; but by the time the waning moon was sinking low in the east they had disappeared. The remaining time before observation could be started was passed in silence.

As the glow on the eastern horizon warned of the mighty star's advent, Leo went to work. Each of the fragments of glass he had obtained from the engineer's goggles was tested in turn, a star viewed through the darkened glass being compared with another seen directly. Little noted the results on the pad, though there was little need. The lenses had originally been very evenly darkened, and as nearly as Leo could estimate, a single thickness of the glass cut about three and five-tenths magnitudes from the brightness of an object.

When the beacon rose, his only task was to find the number of layers necessary to reduce its apparent brightness to that of a star lying in the range where his own judgment was good. The method obviously gave room for error, which increased with each additional thickness used, but it was better than guessing; and anyway, as Leo remarked, since S Doradus is an irregular variable, the best instruments in Civilization would still have left them with a probable error of over half a magnitude.

He measured and computed. "Art was almost right, at that," he remarked finally. "'Near S Doradus' would almost be enough. I get an apparent magnitude of minus fourteen, which means a distance of just under one parsec." He took a fresh sheet of paper from the pad and wrote rapidly. "There," he said, handing it to Little, "is the complete specification of our position, to two decimal places—I can't guess closer. It also includes the type of this planet and sun in standard terms, and a rough idea of our latitude on the planet. If you broadcast that and anyone hears you, they'll find us."

"And he can go right ahead and broadcast it, as soon as the rubbernecks are out of the way," broke in a new voice. "The gadget's done. I haven't tested it, naturally, but it can't help working. Say the word, doc."

Little shook his head. "Not tonight. We must arrange some way to keep the broadcast from being too obvious. Come on to bed and we'll talk as we go. It would be too bad to slip up now."

They arose and walked slowly toward the lighted doorway.

"It seems to me that we only need to gas the guards in the immediate neighborhood, and lock ourselves into the quarters with them outside. There are no outside catches on the main doors, and I could seal the elevator panel with the welder—I didn't use it for the broadcaster, and it should stand the overload long enough."

They passed into the corridor. "That might work," mused the doctor. "There is only the one elevator, and no other entrances to the roof, from below, any-

way. But we'd want as many hours as we could get, and I should think they could burn out the elevator door in a few minutes."

They entered the room in which they slept. "That could be prevented by simply leaving that door open when the elevator was up and going into action at that time," contributed Leo as they pulled off their boots. "Then they couldn't get at either the elevator or its door."

"How about the other men?" asked Little. "It will be difficult to tell them all about the geletane, and how to avoid its effects. What will—"

"Stop worrying about it," interrupted Arthur. He had lain down with the pack for a pillow, moved it to a more comfortable spot, noticed the ease with which it moved and, with a horrible suspicion in his mind, looked into the kit box inside. "The communicator is gone."

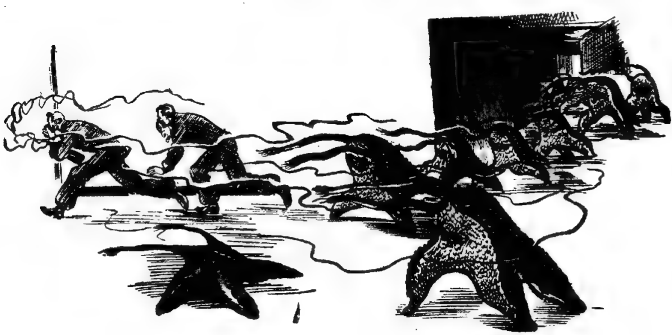
Possibly the guards in the corridor and on the roof were laughing, if their unhuman cerebral processes had ever evolved an emotion akin to humor. Certainly, they were pleased with themselves.

"You loon," growled Leo. "Why did you have to celebrate finishing the thing by tearing outside to tell us? It would have been simpler just to step outside our door and hand it to a guard."

The night had not passed too peacefully, in spite of Little's advice to save recriminations until morning. Relations between the twins were slightly strained. The sunlight coming through the window revealed only too clearly on Leo's face that expression of smug, *"I* wouldn't do such a thing" superiority that tends to drive repentant sinners to homicide.

"The meeting will please come to order," interrupted the doctor. "Leo, lay off Arthur. If it will make you any happier, Art, I'll tell you that if neither of you boys had spilled the beans in a day or two, I should have done so myself—carefully, of course. It was better for it to happen naturally. Now sit around, and wear a disgusted expression for the benefit of the guards if you like, and listen. This will take some time.

"In the first place, I suppose you've realized by now that we were captured simply for observation purposes; the pentapods hoped to learn about our weapons and science from our efforts to escape. They have, we must admit, been rather successful. Our activities have probably been evident to them from the first, but they waited until the communicator was completed before taking it, naturally. That habit of theirs struck me when the Vegans first described the way in which their plans



were never interfered with until nearly mature.

"There was also the question of the surprising ease with which they were able to divine our feeling and intentions. It took me longer to discover the reason for that; but information supplied by the Vegans again provided the key.

"Their language is not verbal. None of us has yet heard them utter a vocal sound. We couldn't understand how they communicated, but to the Vegans it was so evident as to be unworthy of comment—their captor's language was of the same type as their own, visual rather than audible, a sign language in which the thousands of mobile spines with which their bodies are covered replaced the two antennae of a Vegan. It was so complex that the Vegans couldn't begin to learn it, but the method was obvious to them.

"That, to me, gave a nearly complete picture not only of their language, but of their thought; not only of the way they exchanged ideas, but of the very nature of those ideas.

"You have heard, no doubt, that thoughts may be considered as unuttered words. Of course, we do think in visual images, too, but *logical reasoning*, in human minds at least, takes the form of an unuttered conversation with oneself. Think through the proof of a theorem in grade-school geometry, if you don't believe it. With creatures like the Vegans, an analogous process takes place; they think in terms of the visible symbols of their language. The language, as you know, is slow—takes much longer to get ideas across. Also, it takes longer for a Vegan to comprehend something, though they certainly can't be called stupid.

"The same thing should happen, and does happen, with our captors. They think and talk immeasurably *faster* than we do; and their thoughts are not in arbitrary word or picture symbols, but in attitudes. Watching them, I have come to the conclusion that they don't have a language as we understand it at all; the motions and patterns of the spines, which convey thought from one to another, are as unconscious and natural as expressions on our faces. The difference being that their 'faces' cover most of their bodies, and have a far greater capacity for expression. The result is that they have as easy a time learning to interpret expressions and bodily attitudes of other creatures, as we would have learning a simple verbal tongue. What the psychologists call attitude—or expression, to us—is the key to their whole mental activity. Until we understood that, we had no chance of using their own methods to defeat them, or even of understanding the methods.

"When Albee and the others made that break, you noticed that the pentapods wasted no time in pursuing a man who was even slightly out of reach; they were able to reason with extreme rapidity even in a situation like that, and realized that they couldn't catch him. A man would have tried, at least.

"Like everything else, this high-speed communication has its disadvantages. These creatures could never have invented the telephone, any more than the Vegans did; and they'd have had the same difficulty with gadgets such as the telegraph. I don't know anything about their written language, but it must be ideographic and contain, unless I underestimate their capacity for bringing order out of chaos, a perfectly appalling number of symbols. Who could make up a dot-and-dash code for that? The Orientals of Earth had the same trouble. That would interfere with the 'evolution' of communication devices.

"Their long-distance communication, therefore, must be purely visual transmission. We have seen the television screens in their office downstairs—ten feet square, enough to picture any of the creatures full length. I'm sure that they can't broadcast their vision for

two reasons: the Vegans say the ship always returns unexpectedly, and preparations are never made a few hours in advance of its arrival—as they would be if they could broadcast news of their approach. Also, there is no sign anywhere on this building of a beam type second-order projector, or even the loop of a general field broadcaster such as Art was making. The images are transmitted by wire, and only inside this building. That was the reason, Art, that I insisted on your making a visual transmitter. They would have no desire to copy a telephone unit. They have it now; they'll have a full-size visual before that ship leaves; and their communications room is right below here, and should contain emergency accumulators in case the regular power goes.

"When the ship leaves, we wait a day. Then we collect the kitchen refuse, which Denham is accumulating, and pile it into the elevator to take outside—Leo, get that happy expression off your face—making the load big enough so that none of the guards can ride with us, though they don't usually these days anyway. Just before we go, the stove will break down, and Denham will come kicking about it. Arthur will go back, tinker with the stove, remove the geletane tank now clamped to it and replace it with another, and toss the 'used' tank in with the rest of the waste. The elevator will descend one floor, and we will emerge with the tank open. We will *run* toward the office, which is just down the hall, in order to avert the effects of the geletane by activity; we will hold handkerchiefs over our faces to let the guards know we have gas, and hold their breaths. Two of us will enter the communication office, while the third will remain outside to destroy the door control. He can spend the rest of his time welding the door shut, until that welder gives out.

"The guards and operators inside should be under the influence of the gas by then, and will be thrown out before the welding starts. The two of us who are inside will keep exercising until the ventilators clear the air in the room; then we can use the vision transmitter to our heart's content, until the starfish can bring up heavy tools and burn through the door. There are a dozen United bases within five hundred parsecs, even I know; and five minutes should be ample to contact one of them and give our situation.

"Art, did you really think I hoped to get anywhere with that pint-sized thing you built? The pentapods have us here so that we can build equipment for them; I decided that turn about was fair play. I only hope those infernally quick minds of theirs don't grasp the fact that two can play at one game. In case they should, I think we had better start working with Magill on whatever plan he has evolved; that will keep us occupied, reduce the chance of our betraying our secret, and may prove a valuable second string to the bow if our plan falls through. Let's have breakfast."

Little had spoken lightly of "working in" with Magill on whatever plan of escape that worthy might have evolved; at breakfast he discovered that no less than four lines of attack were being developed simultaneously. The quartermaster was hoping that one of them would go undiscovered long enough to reach a climax. He had not divided the men into separate groups for each job; the idea was to confuse the guards by having everybody work on all the plans at once. Confusion had certainly resulted, though none of the pentapods showed the symptoms. Little, first making sure that his own private plan would not be affected by any of the others, plunged joyfully into the conflicting tasks of (1) finding and using one or more of the aircraft which Magill was positive were stored beneath the roof; (2) getting an armed party of human beings into the interstellar flier of the pentapods; (3) carrying out the original Vegan plan of flooding the

building with ultraviolet light without at the same time forcing out the men; and (4) locating an arsenal of the pentapods and simply clearing a section of the building by brute force. Magill intended to use whichever of these plans first attained practicability.

Four days were spent in this fashion. Work at least prevented them from being as boring as the preceding three, though little or no progress was made. On the morning of the fifth day, however, just after the morning meal, an event occurred which opened a fifth line of procedure, and almost caused Magill to abandon the others.

One of the men had gone out onto the roof; and the others were attracted by his cry. Little, following the others to the edge of the roof, looked over; and was rewarded with a clear view of nothing at all. The line of pentapods which had been loading supplies into the vast cruiser was not to be seen, and the vessel's ports were closed. The men watched silently and expectantly, reasonably sure of what was to happen.

Perhaps ten minutes passed without a word being spoken; then, without sound or ceremony, the tremendous cylinder of metal drifted lightly upward. The men followed it for a short distance with their eyes; they might have watched longer, if their attention had not been distracted by an object revealed by the cruiser's departure.

Just beyond the depression in the soil left by the great ship there appeared a second, much smaller, silvery metal torpedo; and a howl of surprise burst from almost every human throat on the rooftop. It was the *Gomeisa,* her ports open, apparently unharmed, and—apparently deserted.

For several seconds after that involuntary expression of astonishment there was dead silence; then Magill spoke.

"This puts a new light on the situation. Don't do anything rash until we decide just how this affects our position; our plans will certainly need modification. I'll be in the market for ideas all morning; we'll have a general discussion meeting after dinner." He turned away from the edge and walked back toward the doorway.

Denham had long since been coached in his part; he played it without a hitch. The load of refuse and the tank of geletane were tossed into the elevator; the three men followed. No guards entered; since the departure of their ship they had concentrated on guarding the lower doors rather than preventing the prisoners from wandering about the fort. Little slid the door of the cage closed and touched the button next to the top, and Arthur took the welder from his pocket.

Slow as it was, the car took but a few seconds to reach the next level. It stopped; Little looked at his companions and slid open the door, at the same instant opening the valve of his gas tank. The three dashed into the corridor and toward the office, handkerchiefs pressed over their mouths and noses.

Two pentapods stood at the open door of the communication room. They swept instantly toward the approaching men, but must have conversed with others inside the room even in that time, for three more emerged after them.

Fast as the men were running, the gas diffused ahead of them; and the rearmost guards, who were moving more slowly than the others were paradoxically, the first to go down under the invisible attack. The others heard them fall, deduced the cause, presumably held their breath—and dropped as though shot. The men hurtled into the room, Little still leading, and found it empty. Evidently the communication officers had joined the guards and, confident of their ability to overcome three human beings, had not even sounded an alarm.

Leo Dennis leaped toward a mass of equipment that was all too plainly of recent installation; Little reversed his motion, snatched the welder from Ar-

thur's hand, and darted back through the door.

"I'll look after this end," he said, "and saturate the air in the corridor while I'm at it. I'm more used to gas and can probably avoid its effects longer than you, Art." He slid the metal portal shut with a clang, tossed the still-open gas cylinder across the hall, and set to work with the welder. He jumped up and down, kicking, dancing, and waving his free arm as he worked; but the hand holding the torch remained steady.

Reluctantly, the metal of door and frame fused and flowed under the heat. The tiny lever that had actuated the opening mechanism dripped away. Slowly a glowing line of red marked the edge of the door and extended around it, a line that did not cease its slow growth as a dozen guards raced around a corner and collapsed as one the moment they paused to take in the situation. One, at least, must have been far enough behind to signal to others; seconds later, another group, clad in transparent, baggy air suits, sped into sight. At almost the same instant the little torch expired.

Little straightened, dropping the instrument, and saw the approaching guards. He turned to run toward the elevator, and saw another group rapidly approaching from that direction. Knowing the futility of the attempt, he tried to dodge past them; one swerved, reached, and an instant later he was pinned motionless as he had been once before in the first break for freedom. But he was still in the region of geletane-impregnated air.

Dr. Little opened his eyes with that peculiar feeling of having done the same thing before. This time memory returned almost instantly; he struggled to his feet, helped by the men clustered around him. He was on the roof of the fort where a stiff breeze had cleared the last of the gas from his lungs and cell walls. No guards were in evidence.

"How did it go?" he asked, seeing the grinning features of the Dennis brothers beside him. "Did you get through?"

"We did. It took them nearly an hour to get heavy tools and cut in—after all, we had control of their local 'telephone' central. They must have called their own ship back at once; it came in ten minutes ago, and they're rushing stuff aboard. I think they're going to abandon this place before help arrives for us. The Ardomese I talked to promised a squadron in fifteen hours.

"I wish that starfish ship had been farther away—we might have been able to take some prisoners of our own. But I'm afraid they'll have time to clear out."

"You're not annoyed, are you?" asked Little. "After all, they didn't hurt you fellows when they found you in the communication room. I think they're rather good sports, myself. After all, they've been risking all along the chance that we might do just what we did; they haven't hurt anyone; and the *Gomeisa* is not seriously damaged."

"Nevertheless, they committed an act of war against the Union," cut in Magill, "and they have stolen a lot of valuable information. The *Gomeisa* carried stuff that could make them dangerous enemies."

"They have had plenty of time to duplicate that armament, and unquestionably have done so," returned Little, "but they seem to have no intention of staying and using it on our ships. I think their curiosity was purely academic; perhaps this was all a game to them. In any case, I can't make myself feel anger toward them. I'm curious, myself, and personally I rather like the creatures. You can make yourself do the same, Keys; the whole thing is only a question of attitude." The doctor traded knowing winks with the Dennis brothers.

THE END.

In Times To Come

Leading off next month is A. E. van Vogt's "The Storm." In "Concealment," present in this issue, the concept of weather in space is introduced—but in the lead story next month the idea is more fully developed. Since space—particularly interstellar space—is a hard vacuum, more thoroughly evacuated than any vacuum tube man's made to date—it might seem impossible that weather could exist there, or that storms could be present. But van Vogt's idea seems so completely sound that the unimaginably vast, æon-long storms he describes must exist—must be a very real and important hazard to a highly developed interstellar civilization. Any physicist can tell you that a bit of lead can drop between the poles of a powerful magnet almost unimpeded—but that a high-velocity lead bullet passing between those same magnet poles may explode into vapor! That has a bearing on van Vogt's "Storm."

There's another item, brought to my mind by the idea behind "Concealment" in this issue—the idea of concealment in the sheer number of stars. The thing that came to my mind has nothing to do with science-fiction—it's the purest fact. If you live in, or close to, a large city, on an average summer night you can see the whole heavens sprinkled with numberless stars of all magnitudes, the moment you step out of your lighted house. When you've been in the starlight a few minutes your eyes become more sensitive, but when you first step out, you can probably see—oh, two thousand stars at the most. Probably nearer fifteen hundred.

The point of this bit of astronomical observation? Well, those infinitely remote stars, shining down in utter silence, are so remote that the nearest of them, exploding into a supernova, wouldn't affect you at all. But suppose you were a Nazi antiaircraft gunner somewhere in the Ruhr, looking up into a sky containing very nearly fifteen hundred bombers, with six thousand huge motors beating their mighty drums against the sky, bearing four to six million pounds of death to explode about you—

Next time you glance up at the stars, think of them for a moment as the navigation lights of a fleet of bombers—a fleet, quite literally, numberless as the stars!

THE EDITOR.

The Analytical Laboratory

Last month there was not sufficient space—nor a sufficient number of reader letters—at hand to run the Lab report on the June issue, wherefore we have, this month, a double Lab. The June issue carried seven stories besides the article; this means that point-score votes ranged from one to seven—and made point scores tend to run high. That's somewhat unfair, in a way—a third-place story or fourth-place story in such an issue has met and surpassed more competition, yet gets a tougher point score than the rear-guard item in a five-story issue. Some day all things will be perfect—and a completely fair system of reporting may be worked out. But anyway:

JUNE ISSUE REPORT

Place	*Story*	*Author*	*Points*
1.	Gather, Darkness (Part 2)	Fritz Leiber, Jr.	1.55
2.	The World Is Mine	Lewis Padgett	2.4
3.	Calling The Empress	George O. Smith	2.6
4.	Pelagic Spark	Anthony Boucher	5.1
5.	Competition	E. M. Hull	5.4

The July issue was a six-story-one-article number. And the scores were:

JULY ISSUE REPORT

Place	*Story*	*Author*	*Points*
1.	Gather, Darkness (Part 3)	Fritz Leiber, Jr.	1.55
2.	The Great Engine	A. E. van Vogt	1.7
3.	Hunch	Clifford D. Simak	3.0
4.	The Renegade	Marion Henry	3.9
5.	Gleeps	P. Schuyler Miller	4.2

THE EDITOR.

Doodad

by Ray Bradbury

Did Man attain supremacy by specializing? No! Man is supreme because he can do everything instead of something. Then why should a machine be made the unsuccessful way? Why shouldn't it, like Man, do everything—

Illustrated by Orban

There was a crowd pressed together in front of the shop.

Crowell light-footed it into that crowd, his face long and sad. He cast a glance back over one lean shoulder, muttered to himself, and widened a lane through the people, quick.

A hundred yards back of him a low shining black beetle car hummed to the curb. A door clicked open, and the fat man with the gray-white face climbed heavily out, his expression one of silent, dead-pan hatred. Two bodyguards sat in the front seat.

Gyp Crowell wondered why he bothered running away. He was tired. Tired of trying to tell news over the audio every night and waking up every morning with gangsters at his heels just because he had mentioned the fact that "a certain fat man has been doing some dishonest finagling of Plastics, Inc."

Now, here was the fat man himself. That black beetle car had trailed Crowell from Pasadena all the way here.

Crowell lost himself in the crowd. He wondered vaguely why this crowd should be so curious about the shop. Certainly it was unusual, but so is everything else in southern California. He broke through the inner circle, looked up at the large scarlet lettering over the blue glass windows, stared at it without a flicker of expression on his lean, perpetually sad face:

The sign on the shop said:

THINGUMABOBS DOODADS WATCHAMACALLITS HINKIES FORMODALDAFRAYS HOOTINANNIES GADGETS DOOHINGIES

Crowell took it in a dead calm. So this was the assignment his audio editor had given him to cover? Small-time screwpot stuff. Should be handled by a cub reporter. Nuts.

Then he thought about Steve Bishop, the fat man with the guns and the bodyguards. Any old port in a storm.

Crowell drew out a small transpara pad, scribbled down a few of those names —doohingies, hinkies—realizing that Bishop couldn't shoot him in this mob. Sure, maybe he had a right to shoot, after that threatened exposé and the blackmail Gyp was using against Bishop: the three-dimensional color images—

Crowell eased over to the translucent door of the shop, pushed it, and followed it in. He'd be safe in here, and doing his routine news assignment, too.

Brilliant light flushed the interior of the shop; pouring over a cold blue-and-white color scheme. Crowell felt chilly. Counting seventeen display cases, he investigated their contents at random, dead-gray eyes flicking passionlessly.

A very tiny man popped out from behind a blue glass case. He was so tiny and bald that Crowell had to repress a desire to pat him upon the head in fatherly fashion. That bald head was made for patting.

The tiny man's face was quite square and a peculiar yellowed tint, as if it had been aged much in the same manner as an old newspaper. "Yes?" he said.

Crowell said "Hello" quietly, taking his time. Now that he was in here he had to say something. So he said, "I want to buy a . . . a doohingey." His voice struck the same tiredly grieved note his face expressed.

"Fine, fine," said the tiny man. He dry-washed his hands. "I don't know why, but you're the first customer. The other people just stand out there and laugh at my shop. Now—what year doohingey will you have? And what model?"

Crowell didn't know. He knew only surprise, but his face didn't show it. he'd begun his inquiry as if he knew all about it. Now was no time to confess ignorance. He pretended to muse over the problem and finally said, "I guess a 1973 model would do. Nothing too modern."

The tiny proprietor blinked. "Ah. Ah, I see you are a man of precise decision and choice. Step right this way." And he scuttled down an aisle, to pause before a large case in which reclined a—something.

It may have been a crankshaft, and yet it resembled a kitchen shelf with several earrings dangling along a metal edge which supported three horn-shaped attachments and six mechanisms Crowell couldn't recognize, and a thatch of tentacles resembling shoelaces poured out of the top.

Crowell made a throat noise, as if strangling on a button. Then he looked again. He decided that the tiny man was an utter idiot; but he kept this decision sealed in his gaunt brain.

As for the little proprietor, he was standing in a perfect ecstasy of happiness, eyes shining, lips parted in a warm smile, hands clasped over his chest, bending forward expectantly.

"Do you like it?" he asked.

Crowell nodded gravely. "Ye-ess. Ye-ess, I guess it's all right. I've seen better models, though."

"Better!" the little man exclaimed. He drew himself up. "Where?" he demanded. "Where!"

Crowell could have gotten flustered. He didn't. He simply took out his note pad, scribbled in it, kept his eyes on it and said cryptically, *You* know where—" hoping this would satisfy the man.

It did.

"Oh!" gibbered the proprietor. "Then *you* know, too. How fine to deal with a connoisseur. How fine."

Crowell flicked a glance out the window, past the chuckling crowd. The fat man and his bodyguards and the black beetle car were gone. They had given up the chase for a while.

Crowell whipped his pad into his pocket, put his hand on the case with the doohingey in it. "I'm in a great hurry. Could I take it with me? I haven't money, but I'll make a down payment in trade. All right?"

"Perfectly all right."

"O. K." Crowell, with some misgiving, reached into his loose-fitting gray blouse and drew forth a metal apparatus, an old pipe cleaner that had seen better days. It was broken and bent into a weird shape. "Here you are. A hinkie. A 1944 model hinkie."

"Oh." The little man exhaled dismay. He stared with horror at Crowell. "Why, that's not a hinkie!"

"Uh . . . isn't it?"

"No, of course not."

"Of course not," repeated Crowell carefully.

"It's a whatchamacallit," said the lit-

tle man, blinking. "And not a whole one, either; just part of one. You like your little joke, don't you, Mr.—"

"Crowell. Yeah. My little joke. Yeah. If you don't mind. Trade? I'm in a great hurry."

"Yes, yes. I'll load it on a skate platform so we can roll it out to your car. One moment."

The tiny man moved swiftly, procuring a small wheeled truck, onto which he transferred the doohingey. He helped Crowell roll it to the door. Crowell stopped him at the door. "Just a moment." He looked out. The black beetle car was nowhere in sight. Good. "O. K."

The little man's voice was soft with caution. "Just remember, Mr. Crowell—please don't go around killing people with this doohingey. Be . . . be selective. Yes, that's it, be selective and discerning. Remember, Mr. Crowell?"

Crowell swallowed a number-ten-size lump in his throat.

"I'll remember," he said, and hurriedly finished the deal.

He took the low-level avenue tube out of the Wilshire district heading for his home in Brentwood. Nobody trailed him. He was sure of that. He didn't know what Bishop's plans for the next few hours might be. He didn't know. He didn't care. He was in the middle of another pall of melancholy. It was a lousy, screwball world, in which everybody had to be dishonest to get along. That fat slug of a Bishop, he—

The contraption on the seat beside him drew his attention. He looked at it with a little shaking dry laugh coming out of his mouth.

"So you're a doohingey?" he said. "Huh. Everybody to their own special racket. Bishop and his plastics, me and my blackmail, and that little dope with the doodads and hingdooies. At that, I think the little guy is the smartest."

He turned his white beetle car off the sub-branch tube and went down a side tunnel that came up under his block. Garaging his car and scanning the surrounding park carefully, he lugged the doohingey upstairs, opened the dial door, went in, closed the door, and set the doohingey on the table. He poured himself a few fingers of brandy.

A moment later someone rapped softly, quietly and very slowly on the door. No use putting it off. Crowell answered and opened it.

"Hello, Crowell."

The fat man at the door had a face like cooked pork, cold and flabby. His eyelids drooped over red-veined, green-irised eyes. He had a cigar in his mouth that moved with his words.

"Glad you're home, Crowell. Been waiting to see you."

Crowell backed up and the fat man came in. The fat man sat down, put his hands over his round belly and said, "Well?"

Crowell swallowed. "I haven't got the images here, Bishop."

The fat man didn't say anything. He unlocked his two hands slowly, reached into his pocket as if to get a handkerchief and brought out a small paralysis gun instead. Cold blue steel.

"Change your mind, Crowell?"

Crowell's sad white face looked all sadder with cold sweat on it. His throat muscles lengthened. He tried to get his brain working, but it was locked in cement, hard and hot and furiously, suddenly afraid. It didn't show through to the outside. He saw Bishop, the gun, the room joggling up and down in his vision.

And then he saw the . . . the doohingey.

Bishop shifted the safety stud on the gun. "Where'll you have it? Head or chest. They say you die quicker if they paralyze your brain first. I prefer touching the heart with it, myself. Well?"

"Walt a moment," said Crowell carelessly. He made himself draw back a slow pace. He sat down, all the while realizing that Bishop's finger was quavering on a hair trigger. "You're not going to kill me; you're going to thank

me for letting you in on the greatest invention of our time."

Bishop's huge face didn't change a line or muscle. His cigar waggled. "Snap it, Crowell. I haven't time for greasing the tongue."

"Plenty of time," said Crowell, calmly. "I've got a perfect murder weapon for you. Believe it or not, I have. Take a look at that machine sitting on the table."

The gun remained firm, blue steel. Bishop's eyes slide to one side of his face, jerked back. "So what?" he said.

"So if you listen to me you can be the biggest plastics boss to ever hit the Pacific coast. You want that, don't you?"

Bishop's eyes widened a microscopic trifle, narrowed. "Are you stalling me for time?"

"Look, Bishop, I know when I'm cooked. That's why I'm cutting you in on . . . on that damned doohingey of mine."

"On that *what?*"

"I just call it a doohingey. Haven't got a name for it yet." Crowell's brain was rotating, throwing ideas off one after another with the heated centrifuge of desperation. One idea stuck. *Keep Bishop stalled until you have a chance to get his gun. Bluff him. Bluff him like hell. Now—*

Crowell cleared his throat. "It . . . it's a radio killer," he lied. "All I have to do is give it directions and it'll kill anyone. No mess. No nothing. No clues. Perfect crime, Bishop. Interested?"

Bishop shook his head. "You been drinking. It's getting late—"

"Hold on," said Crowell, suddenly tensing forward, his gray eyes bright. "Don't move, Bishop. I've got you covered. That machine is trained on you. Before you came in I set it to a certain frequency. One squeak out of you and it'll nail you!"

Bishop's cigar fell to the floor. The gun hand wavered.

Crowell saw his chance. His lean muscles bunched into one one tight, compact coil. His mouth opened, words darted out. "Watch it, Bishop! All right, machine, do your stuff! Kill Bishop!"

And with that, Crowell catapulted himself. He felt himself leave the chair, saw the startled look on Bishop's face. The misdirection had worked. The gun went off. The silver beam sizzled past Crowell's ear and splashed on the wall. Crowell snatched with both hands to clutch Bishop, get the gun.

But Crowell never got to Bishop.

Bishop was dead.

The doohingey got there first.

Crowell had a drink. Then he had another. His stomach was floating in the stuff. But he still couldn't forget how Bishop looked—dead.

Bishop had died—how? He had been sort of stabbed, shot, strangled, electrocuted—he'd been . . . uh . . . you know what I mean? He was sort of—dead, Yeah, that's it. Dead.

Crowell had another drink just on account of that. He looked at the bedroom wall and decided that sometime in the next minutes those bodyguards would be busting in up here, looking for their boss. But Crowell couldn't stand the thought of going in the living room to see where Bishop lay on the floor next to the—doohingey. He shivered.

After two more drinks that didn't even touch his mind, he got around to packing some of his clothes. He didn't know where he was going, but he was going. He was about to leave the house when the audio made a gonging noise.

"Yes?"

"Mr. Crowell?"

"Talking."

"This is the little man at the Doodads Shop."

"Oh, yeah. Hello."

"Would you mind dropping by the shop again? And please bring the doohingey with you, yes? I fear that I've short-changed you on that model. I have another one here that is much better."

Crowell's voice got caught in his throat. "This one seems to be working fine."

He cut the contact and held onto his brains with both hands so they couldn't slide down into his shoes. He hadn't planned on killing anybody. He didn't like the idea. And that put him on the spot even more than before. Those gunmen bodyguards wouldn't stop now until—

His jaw stiffened. Let them come after him. He wasn't running away this time. He was staying in town, doing his news work as if nothing had happened. He was tired of the whole business. He didn't care if he got shot now or not. He'd even laugh with joy when they were shooting.

No use making unnecessary trouble, though. He'd carry the fat man's—body—down to the garage, put it in the back seat of the white beetle, and drive past some lonely spot, bury it, and hold the bodyguards off by telling them he had kidnaped Bishop. Yeah, that was a good idea. Clever man this Crowell.

"All right—" He tried to lift Bishop's tremendous body. He couldn't. He finally got the body downstairs to the beetle, though—the doohingey did it.

Crowell stayed upstairs until the job was done. He didn't like to watch the doohingey at work with a dead body.

"Ah, Mr. Crowell." The little proprietor opened the gleaming glass door. There was still a small crowd outside. "I see you brought the doohingey. Good."

Crowell set the contraption on the counter, thinking quickly to himself. Well. Now maybe explanations would be made. He'd have to be subtle; no blunt questions. He'd—

"Look, Mr. Whosis, I didn't tell you, but I'm an audio reporter. I'd like to broadcast a story about you and your

shop for the Audio-News. But I'd like it in your own words."

"You know as much about the thing-umabobs as I do," replied the little man.

"Do I?"

"That's the impression you gave me—"

"Oh, sure. Sure I do. But it's always better when we quote somebody. See?"

"Your logic is nebulous, but I shall co-operate. Your listeners will probably want to know all about my Doodad Shop, eh? Well, it took thousands of years of traveling to make it grow."

"Miles," corrected Crowell.

"Years," stated the little man.

"Naturally," said Crowell.

"You might call my shop the energy result of misconstrued improper semantics. These instruments might well be labeled 'Inventions That Do Everything Instead Of Something.'"

"Oh, of course," said Crowell, blankly.

"Now, when a man shows another man a particular part of a beetle car's automotive controls and he can't recall the proper label for that part, what does he do?"

Crowell saw the light. "He calls it a doodad or a hingey or a whatchamacallit. Right?"

"Correct. And if a woman, talking to another woman about her washing machine or egg beater or knitting or crochetting and *she* had a psychological blocking, forgets the proper semantic label, what does *she* say?"

"She says 'Take this hungamabob and trinket the turndel with it. You grasp the dipsy and throw it over the flimsy,'" said Crowell, like a school kid suddenly understanding mathematics.

"Correct!" cried the little man. "All right, then. Therefore we have the birth of incorrect semantic labels that can be used to describe anything from a hen's nest to a motor-beetle crankcase. A doohingey can be the name of a scrub mop or a toupee. It's a term used freely by everybody in a certain culture. A doohingey isn't just one thing. It's a thousand things.

"Well, now, what I have done is form into energy the combined total of all things a doohingey has ever referred to. I have entered the minds of innumerable civilized humans, extracted their opinion of what *they* call a doohingey, what *they* call a thingum, and created from raw atomic energy a physical contraption of those mentally incorrect labelings. In other words, my inventions are three-dimensional representations of a semantic idea. Since the minds of people make a doohingey anything from a carpet sweeper to a number-nine-size nut-and-bolt, *my* inventions follow the same pattern. The doohingey you carried home today could do almost anything you would want it to do. Many of the inventions have robotlike functions, due to the fact that the abilities of movement, thought and mechanical versatility were included in them."

"They can do everything?"

"Well, not everything. Most of the inventions have about sixty different processes, all alien, all mixed, all shapes, sizes, molded into them. Each one of my creations has a different set of services. Some are big. Some small. Some of the big ones have many, many services. The small ones have only one or two simple functions. Not two are alike. Think of the space and time and money you save by buying a doohingey!"

"Yeah," said Crowell. He thought about Bishop's body. "Your doohingey is certainly versatile, all right."

"That reminds me," said the little man. "About that 1944 model hinkie you sold me in trade. Where did you get it?"

"Get it? You mean that pipe cle— I mean, the hinkie? I— Oh, well, I—"

"You don't have to be secretive. We share trade secrets, you know. Did you make it yourself?"

"I . . . I bought it and worked on it. The . . . the power of thought, you know."

"Then you *know* the secret? How astonishing! I thought I was the only one who knew about the transmission of thought into energy forms. Brilliant man. Did you study in Rruhre?"

"No. I was always sorry I never got there. Never had the opportunity. I had to struggle along alone. Look, I'd like to turn this doohingey in for another apparatus. I don't like it."

"You don't like it? Why not?"

'Oh, I just don't. Too cumbersome. Give me something simple every time."

Yeah, simple, he thought, something you can see how it works.

"What kind of machine do you want this time, Mr. Crowell?"

"Give me a . . . gadget."

"What year gadget?"

"Does that make a great deal of difference, what year?"

"Oh, you're joking again, aren't you?"

Crowell swallowed. "I'm joking."

"You know, of course, that in each year for thousands of years that the type of gadget and the name for a gadget would be different. A thingooey of the year 1965 would be an oddsblodkins in 1492. Or a ettubrutus in the days of Caesar."

"Are *you* joking?" asked Crowell. "No. Never mind. Give me my gadget and I'll go home."

That word "home" startled Crowell. It wouldn't be wise to go there just yet. Hide out for a while until he could send a message to the bodyguard saying that he was holding Bishop a prisoner. Yes. That was it. That was safest.

In the meantime he was curious about this shop, but not curious enough to have horrible contraptions like that doohingey near him. The little man was talking:

"I've a whole case full of thingumabobs from all historical periods I'll give you," he was saying. "I'm so overstocked with stuff, and nobody but you takes me seriously so far. I haven't made one sale today. It's quite saddening."

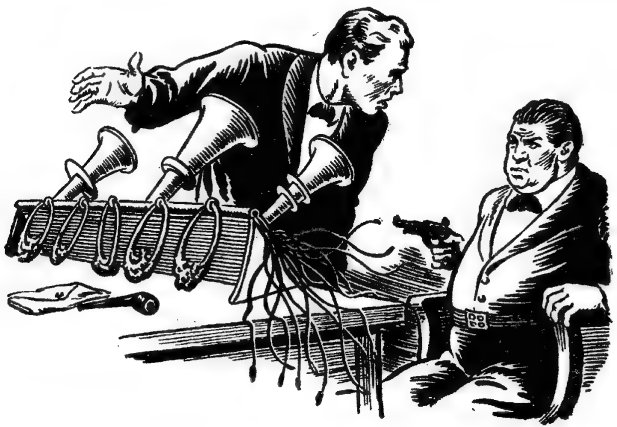
Crowell felt sorry for the man, but—

"Tell you what. I've got an empty storage room in my house. Send the stuff around in a few days and I'll look it over and take what I like."

"Can't you take some of it with you now?" pleaded the little man.

"I don't think I can—"

"Oh, it's small. Very small stuff.



Really. Here, I'll show you. A few little boxes of trinkets and knicknacks. Here. Here they are." He bent behind a counter, brought out six boxes, enough to load Crowell's arms up to the chin.

Crowell opened one box. "Sure. I'll take these. Nothing but soup strainers, paring knives, lemon juicers, doorknobs and old meerschaum pipes from Holland. Sure, I'll take *these*." They looked safe. They were small, simple. Nothing wrong with them.

"Oh, thank you. Thank you. Put these in the back of your beetle, gratis. I'm glad to clean them out of the store. I've done so much energy creating in the last few years or so I'll be relieved to get rid of them. Sick and tired of looking at them. There you go."

Crowell, his arms full, staggered out to his white beetle and tossed the stuff in the back seat. He waved to the little man, said he'd see him again in a few days, and drove off.

The hour spent in the shop, the gibbering joy of the little man, the bright lights, had made him forget, for the time, about Bishop's bodyguards and Bishop himself.

The beetle car hummed under him. He headed downtown toward the Audio studios, trying to decide what was wisest to do. He reached back, curiously, and pulled out one of the little gadgets. It was nothing more nor less than a pipe. Seeing it, made him hungry for a smoke, so he took the pipe, filled it with makings from his blouse pouch, and lit it, experimentally, carefully. He puffed smoke. Fine. A good pipe.

He was busy enjoying the pipe when he noticed something in the rear-view mirror. He was being followed by two black beetle cars. Not mistaking those low ebony high-powered crawlers.

He cursed silently and put on speed. The beetles were catching up with him, gaining speed every instant. There were two thugs in one of them, and two in the other.

"I'll stop and tell them that I'm holding their boss as hostage," said Crowell to himself.

There were guns gleaming in the hands of the thugs in the black cars.

Crowell realized that they would shoot first and talk later. He hadn't planned that. He had planned on hiding away and calling them and giving them his ultimatum. But—*this!* They were coming after him. He wouldn't have a chance to explain before they'd shoot him down.

He increased the speed with his foot. Sweat came out to play on his forehead. What a mess. He was beginning to wish he hadn't returned the doohingey to the shop. He could use it now, just as he had inadvertently used it on Bishop.

Doohingey! Gadgets!

Crowell cried out in relief. Maybe—

He reached into the back seat and scrabbled wildly among the litter of gadgets. None of them looked like they could do anything, but he'd try, anyhow.

"O. K., you thingums, do your stuff! Protect me, damn you!"

There was a rattling crisp noise and something metallic thumped past Crowell's ears, winged outside on transparent glass wings back in the direction of the pursuing enemy car and hit it head on.

There was an explosion of green fire and gray smoke.

The fraltamoret had done its work. It was a combination of a little boy's automatic airplane and an explosive projectile.

Crowell pressed the floor plate and shot his beetle ahead again. The second car was still pursuing. They wouldn't give up.

"Get them!" cried Crowell. "Get them, too! Get them any way you can!" He dumped two boxes of trinkets out the window. Several of them took flight. The others bounced harmlessly on the cement.

Two missiles glittered in the air. They looked like old-fashioned pinking shears, sharp and bright, and an antigravity

main-mechanistic drive attached. They sang along the boulevard until they got to the remaining black beetle car.

They went in through the open windows, gleaming.

The black beetle car lost its control and went off the avenue, turning over and over, smashing, and bursting into a sudden savage fire.

Crowell slumped in his seat. He let the beetle slow down and pull around a corner and over to the curb, stopping. He was breathing fast. His heart crashed.

He could go home now, if he wanted to. There would be no one else waiting for him at home, waiting to ambush him, stop him, question him, threaten him.

He could go home now. Funny, but he didn't feel relieved or happy. He just felt dark, unhappy, ill at ease. The world was a lousy place to live in. He had a bitter taste in his mouth.

He drove home. Well, maybe things would be better. Maybe.

He took the remaining boxes of trinkets and got out of the beetle and took the vac-elevator upstairs. He opened the door and laid the boxes down and sorted through them.

He still had that pipe in his mouth, after all the excitement. He had picked it up automatically and put it back in his mouth. He was nervous. Needed another smoke now to quiet his mind.

He put fresh tobacco in his new pipe and puffed it into life. That little man was a screw for giving him all this stuff. Dangerous to have this sort of knowledge lying around in the world. All kinds of wrong people might get hold of it, use it.

He laughed, and puffed at his pipe.

From now on, he'd play big shot. With the help of the little man and the shop, he'd make those big Plastics officials jump, pay him money, obey his every thought. Damn them.

It sounded like a lot of trouble, though. He sat down and scowled and brooded about it and his thoughts got dark, like they had been for so many years. Pessimistic.

What was the use of trying to do anything in this world? Why did he bother to go on living? He got so tired.

Sometimes, like tonight and so many nights in the long years, he felt that it might be a good idea if those gunmen caught up with him and filled him full of paralysis. Sometimes, if he had a gun in his own fingers, *he'd blast his brains out.*

There was a sharp explosion. Crowell stood up suddenly. He stiffened and fell down on his knees.

He'd forgotten about the pipe in his mouth—forgotten it was a thingumabob gadget.

It took an unpleasantly fatal way of reminding him.

THE END.

The End Of The Rocket Society

by Willy Ley

Concluding the discussion of the life, work, and death of the most active of all rocket societies. Ley shows herein why there is no longer any worth-while work to be accomplished by an organization of this type.

In H. H. Holmes' amusing "Rocket to the Morgue" there is a reference to an old stage joke which, however, was new to me when I read it there. The scene is a party or a meeting in a hotel room, periodically interrupted by a drunk wandering in in search for the toilet. And when wandering in for the fifth time he asks plaintively: "Are you in *all* the rooms?"

To an outside observer during the years 1930 and 1931 it must have looked as if the "rocket people" were in all the rooms—at least in all the rooms in Berlin. For weeks we had an exhibit of the Oberth rocket, the Mirak and a lot of apparatus right in the middle of Potsdamer Platz. Then the exhibit was moved for two weeks to Wertheim's—Berlin's equivalent of Macy's—and could have been moved to the equivalent of Gimbel's after that, if the equipment had not been needed. We got more newspaper space than ever before and every magazine in existence ran at least one article about our activities. I overheard fishermen mending their nets at the shores of the Baltic talk about the VfR; I had to explain the principles of rocket propulsion to innumerable street-car conductors, gasoline-station operators and bookkeepers, in addition to the normal complement of engineers and newspapermen. One morning I received a letter with government stamps on it—philatelists will know what I mean, the *Dienstmarken* that go on "official business"—asking me to come to the Reich Post Ministry to see Postal Counselor So-and-So. It turned out that the counselor was the editor in chief of a biweekly official magazine, "must" reading for all postal employees. He wanted me to write a comprehensive report about the VfR for immediate publication, to be followed up by supplementary articles once every second month. Thereafter all postal employees knew as much about rockets and the VfR as most of the members.

When a newspaper carried the story that societies like the VfR had been founded in New York and in Leningrad, the Berlin radio wisecracked: *Planetarier aller Länder, vereinigt euch!**

*In translation: "Planetarians of the World, Unite." You know the source of that appeal. The newspaper in question was a bit late, actually the American Interplanetary Society—now: American Rocket Society—had been founded by G. Edward Pendray in March, 1930, the Leningrad society by Professor N. A. Rynin and Dr. Yakov I. Perelman in November, 1929.

The little books carried by policemen had an entry—under the heading: Points of Interest—reading: *"Raketenflugplatz,* proving ground for liquid fuel rockets of the VfR, at Reinickendorf, street car lines No. 25, 26, 28 and 31. Visitors only in groups by appointment." The intensity of the interest can be judged by the following: Around the middle of December, 1931, I knew that I would have about a week in January or February to visit my parents living in Königsberg in East Prussia. I also informed one of our few Königsberg members about it and he wrote back asking whether I would be willing to lecture.

My week then looked as follows: Sunday, radio; Monday, Engineering Society; Tuesday: free; Wednesday, University, Geographical Seminary; Thursday, Merchant's League; Friday: University, Department of Physics; Saturday: free; Sunday: radio again. I did not speak a word without being paid for it, and the VfR got half of the gross proceeds. When I got back to Berlin I slept for a full day: six lectures in eight days, plus an eight-hundred-mile round trip, is work.

Well, this was the end of the "year of success," 1931. But now I must go back to the beginning of that year.

I have told that Nebel got the rocket proving ground in September, 1930, we agreed on September 27th as the birthday because he got the keys on that day. The first work, that enormous house cleaning, did not begin until the middle of October. I have also told how Nebel and Riedel began to amass a workshop, equipment, raw materials and something resembling a two-bachelor household during the winter, while I pulled the society together with the help and hindrance of Wurm and others. Fortunately the winter was mild, outdoor work was possible about half of the time.

But before I can describe the work I have to draw a word-sketch of the place. The area of the *Raketenflugplatz* was four square kilometers, not quite two square miles, but it was difficult to reach. From the nearest important street—and the street-car stop—a dirt road led across a then unused flat field to a cluster of houses and an old army garrison, used by the police as a kind of local headquarters. That was a one-mile walk, cars were not permitted on the dirt road for some reason, a city ordinance that was often violated when no policeman was in sight. Visitors just drove up, claiming that they were lost when stopped, but that claim did not work for us. The *Raketenflugplatz,* however, did not border that road directly.

Across the street from the police garrison another dirt road branched off, leading for some nine hundred feet through a collection of truck garages, small manufacturing establishments and a few one-family houses, the typical picture of a worker's suburb. A wire fence with a gate marked the border of the old ammunition dump. One square mile of it was plane, evidently deforested at some time in the past, because forests grew immediately beyond the wire fence on two sides. Also: the ants were forest ants.

The remainder was hilly and in places mildly swampy, with a thick growth of young birch and a number of older beech and pine trees. One road, in an awful state of disrepair, led across the place to another gate opening to another street in the back, it was too far away for our convenience, I used it exactly once in two years. A one-story barrack—"building" would be too much—with foot-thick concrete walls was near the gate, a duplicate of this one was tucked away in the farthest corner on the other side. Both were partitioned by brick walls: one wall divided the building into two sections, one twice as large as the other and the second wall divided the smaller part again into two equal parts.

About six other and much larger massive concrete buildings were scattered through the birch-wood section, most of them surrounded by massive earth works, as high as the buildings and sixty

feet thick at the base. They were blast guards, erected in view of the possibility that the ammunition stored in those buildings might go off. One of these buildings, fortunately the one closest to the small one near the gate, was divided into two floors by means of a wooden ceiling, made of two-inch planks on eight-by-eight-inch beams. A bridge led from a door in that upper story to the upper rim of the earth wall.

We never used more than these two buildings. The small one near the gate became living quarters for Nebel and Riedel, with the big room as combination office-reception and board of directors meeting room—I called it the *chambre à tout faire*. The bigger building became the workshop as soon as the winter was over. And the other small building was occupied for a while by a paying tenant: Winkler.

When the doors were first pulled open we found an almost solid layer of decaying and decayed wood and paper, about a yard high. It took a week of cleaning out and burning—and after that the *chambre à tout faire* was stuffed almost as badly with things as they came in: boxes of hand tools, a small lathe, aluminum in sheets, magnesium alloys in tubes, angle irons, screws, nuts and bolts, pots of paint and in short all the stuff that goes into the making of a machine shop. In the midst of all this the Oberth rocket stood like a big airplane bomb and caused visitors to stamp out their cigarettes in a hurry. It was a marvelous confusion, it was the stuff to build dreams with—dreams that literally soared up into the sky.

By March, 1931, quite a number of things had been accomplished. The so-called "small proving stand" for the Mirak had been erected—and used—near the office building, as I'll call it for brevity's sake. It was a combination device, it could serve as a launching rack as well as a test stand. Essentially a launching rack for the Mirak, it had auxiliary devices which permitted us to clamp the rocket tight so that the latter, when burning, would try to pull out of the clamp. That pull could be measured. It showed again what it had showed before: that the Mirak developed a thrust some six or seven pounds higher than its own weight. It would have risen if released. Finally the oxygen tank burst and that was the end of the second Mirak.

The "large proving stand" was ready, too. It was located outside the earth wall near the workshop building, operated by cable releases from the top floor of the workshop. It was not possible to see the test stand from the top floor where the controls were located directly next to the door that led to the bridge; the man directing the test stood on top of the earth wall and shouted commands. The orders, given after the test-stand crew had reported that everything was ready and had scrambled to safety, ran like this: *Feuer!—Benzin! Sauerstoff!* Fire!—meaning: ignition—Gasoline! Oxygen!

The thing worked as follows: the test stand itself was the heavy angle-iron launching rack originally built for the Oberth rocket. To the right and to the left of the launching rack tanks for oxygen and for gasoline were buried, each with its separate nitrogen flask for providing pressure. The valves were operated from the top floor, as was the ignition. The latter consisted of an electric primer which ignited a kind of small powder rocket. The powder in that rocket had been especially compounded by one Dr. Feistl, the chief chemist of a large pyrotechnic factory, it was a powder that produced a very low exhaust velocity—and consequently a very slight recoil—but a very hot flame. Nor could that flame be extinguished by water or by a jet of very cold compressed gas. Ordinary pyrotechnic mixtures and even thermite had proved unreliable on the latter count. This "rocket" jetted its flame across the exhaust nozzle of the rocket motor to be tested, it burned for about half a min-

ute. When it was working full blast the nitrogen valve that put pressure on the gasoline tank was opened and at the instant the gasoline jet caught fire the oxygen was added.

The rocket motor itself was placed inside a large metal container, which was open on top, with a hole in the bottom to fit the nozzle perfectly. A water pipe ran into this container, the water was drained off through another pipe welded to a hole near the bottom of the container. The ground crew's last job before scrambling up the hill was to turn the water on, everything else was done from a distance. Usually all these precautions were unnecessary and the motors roared through their ninety seconds of testing without mishap, but there were just enough explosions to keep us from getting foolhardy. Once a motor burned through at a faulty place in the welding seam with the weird effect that there were two fire jets, one vertical and one horizontal, the latter carrying a steaming spray of water with it. Another time the whole welding seam broke, the top part of the combustion chamber shot skyward while the jet burned two enormous holes in two sheets of quarter-inch boiler plate that served as blast guards; all in the two or three seconds before the man at the controls turned the pressure off.

For years I kept a piece of a spade handle with a deeply embedded splinter from an exploded motor, it would have penetrated two inches in flesh.

But such accidents were rare, usually the motors developed their thirty-two kilograms—seventy pounds—of recoil without even wavering. Usually, I should have said, they developed thirty kilograms during the first run and thirty-two kilograms afterward, those that stood the first run improved with use. The exhaust velocity of the blast—computed from recoil and amount of fuel consumed—was almost precisely two thousand meters per second, some six thousand six hundred feet per second. After a little practice we could hear and see whether a motor worked perfectly, without even looking at the recording tape. If the sound was that of an enormous waterfall and the flame short and virtually invisible, everything was perfect. If we got machine-gun staccato and bright fire, it was time to duck.

When Mr. and Mrs. G. Edward Pendray of the American Interplanetary Society visited the *Raketenflugplatz* in April, 1931, we could demonstrate just such a test run.

There was a third test stand, named Portable Proving Stand. It was actually portable, consisting of two small fuel tanks, a small pressure flask and a simple scale. It had been built specifically for demonstrations, to show how a rocket motor behaved. But it was put to better use. All the motors that were put on the large test stand and those that were put into rockets were made of thin aluminum, egg-shaped and about the size of a large chicken egg. But every once in a while somebody had a bright idea, suggesting this or that shape. The Portable Stand did not hold fuel for more than about ten seconds, but that was enough to explode those bright ideas, literally. Or somebody wanted to test another metal. Riedel fondled a shining copper egg for three weeks until he put it on: it produced blue and green fireworks, visible even in bright sunshine. Visiting Krupp engineers sang the praise of a new steel they had. It had been developed for strong boxes and it did not yield to the oxyacetylene torch of mechanized burglars. Or rather: it needed so much gas to make that steel yield that nobody could carry the necessary supply. They built such a motor for us—without changes in design—and it looked dull gray and impressive: after two seconds it was dull red, after three seconds it was bright cherry red and after four and one half seconds it disintegrated into a shower of white sparks!

Both the copper and the steel egg were supposed to work without cooling, since that did not work we stuck to aluminum

which is much easier to handle and to weld—*if* the welder knows how to do it.

It is impossible to say that one man invented this and another man invented that. There were only two things that were specifically one man's inventions: Oberth's *Kegeldüse* and Nebel's first Mirak. Everything else resulted from discussions of two, three or more people, it was impossible to tell later who had what idea first. Nor was there any need for knowing just who had suggested first to substitute, say, nitrogen pressure in an oversized fuel tank for the carbon dioxide cartridge. I know that other societies delight in recording with meticulous care who made the tremendous discovery of using, say, another type valve in a certain place. To spend time for such things might be amusing, but it is most unimportant. If anybody should entertain great commercial hopes when doing that, I can assure him that the commercial rockets of the future will bear little other than outward resemblance to the present-day experimental types. And so far I have not seen a single experiment—and I have seen more rocket experiments than anybody else—that contained parts not known elsewhere, either in actual use or in patent literature. Nor have I seen a single experimental set-up that could not have been designed by any good engineer with some rocket experience and some trial and error behind him.

A "legal experiment" conducted by Oberth proves this point nicely. Oberth was beset by "inventors" with enormous ideas. They were all two centuries old—the ideas; the inventors behaved like babies—and they were all expected to yield at least half a million. Oberth had a lot of very practical moments and in one of them he sat down and drew up a patent for a spaceship, complete, with air purifiers, water regenerators and everything. It involved a lot of detailed research, a stack of drawings and a long description. The German Patent Office rejected the application after some time with an even longer write-up, proving point for point that all the equipment of a spaceship, including injection and exhaust nozzles, et cetera, et cetera, was "known," which means that it was either in actual use somewhere—mostly in power plants, airplanes and submarines—or had been patented or published before. They were ready to grant patents on some parts, if and when designed in a specific shape for that specific use.

I left off with the descriptions of some tests conducted on the Portable Stand. There was a lot of testing to be done. Alcohol was tested in place of gasoline. Alcohol-water mixtures were tested with internal cooling in mind. The tests proved the point, but an enormous plume of steam was produced which was not so good for certain reasons of publicity—we were still fighting the powder boys and loathed to have something that looked like a trail of smoke. In between there was some trouble with raw materials. The German navy had an aluminum alloy developed for its own purposes that was corrosion-proof in the presence of sea water. Its name was *KS Seewasser*—we got hold of some and made it into a gasoline rocket tank. Within twenty-four hours a few remaining drops of gasoline had eaten their way two thirds of the thickness through the metal.

It all settled down finally to a standard fuel—gasoline; to a standard motor—the thirty-two kg-thrust egg; and to a standard material for the fuel tanks, a magnesium alloy known under the trade name of *Elektron*. There are some eight types of *Elektron;* the one in use in German incendiary bombs and ours were the two forming the two ends of the line of these eight types.

The big test stand was used only for three purposes then: one was the testing of standard motors, the other was to give demonstration runs, and the third to test larger motors which were to be developed later. These demonstration runs—and later demonstration flights—provided a part of our income. We would, for example, invite one or the

other engineering society to witness a test run and to listen to a lecture for a flat fee of, say one hundred fifty or two hundred marks, regardless of attendance. In such a case we usually tested one or two new motors that had not had any previous runs and held a tested one in reserve, in case the new ones would not perform properly.

All this took place during March, April and May, 1931, and everything, or most everything, went fine.

The finances were all right. Most of the members paid their dues for the new year then—the equivalent of three dollars a year—and the manufacturer Hugo A. Hückel, mentioned in the first part, contributed from one hundred to one hundred fifty dollars a month. Various public meetings with lectures brought in some more money and the demonstrations helped greatly. The main difficulty then apparent was the fact that the president of the society resided in Mediash. And Oberth often refused to sign this or that, saying that he was unable to judge the facts or take the responsibility from such a distant place. He was perfectly correct in saying that, but it was a bad handicap. He finally resigned, actually but not legally, and for several months there was no president, finally a retired officer, Major Hanns-Wolff von Dickhuth-Harrach, was elected president. I remained vice president as usual. Major von Dickhuth's election produced all the groundwork for a psychological explosion which I postponed as long as possible.

In April plans for a bigger motor were drawn up, it was supposed to produce sixty-four kilograms of thrust, some one hundred forty pounds, but it never got much beyond fifty kilograms or one hundred ten pounds. Since observation from the top of the earth wall was not satisfactory enough, a dugout was built in the foot of the wall, some twenty feet from the test stand in direct line of vision. There was room for two men in the dugout, they observed and photographed through a one-inch slit in the solid planks that protected their faces.

But in April, 1931, some conferences about flying rockets took place. Riedel and I met several times alone and a few times with some others to discuss them. There existed an unwritten rule that the five men actively engaged would discuss anything involving the expense of money and material before it was done. And since we did not want to waste money or material on foolish ideas, the unwritten rule stated that the decision had to be unanimous, everybody had to agree that it was at least worth a trial. Which implied that nobody should contradict for the sake of contradiction or rhetoric and that necessitated a stratagem. Whenever Riedel, I and others met to discuss new experiments we saw to it that Nebel was busy at that time. Of course his consent was needed, too, but Riedel could get that much better alone; he always succeeded in making Nebel believe that the ideas were really his.

That did not work for the first flying rockets of the VfR. Nebel would never have consented to abandon work on the third Mirak. Riedel got a relative of his to give him the small amount necessary—I may add here that the economic situation was so tense in Germany at that time that buying a suit of clothes was a major and usually impossible expenditure to ninety-five percent of the population. The idea we evolved ran like this: put a motor between two Mirak tails and see whether it gets enough power. Riedel did just that and waited for a quiet period. It came soon. After the Pendrays had left, Nebel decided that he would relax by attending some kind of aëronautical meeting in Kiel, he took the Oberth rocket along to have something to talk about and possibly raise some money. Consequently, there were no demonstrations—Nebel always arranged for that—and we were left to straighten everything out a bit. This was early in May, 1931, and before I suspected it, Riedel called me up in my office one Monday morning.

A translation of what he said would read about as follows: "You know the secret baby we discussed, well, I took it out yesterday to make a test run. I didn't expect anything; you know I used those heavy valves and the fat struts along the fuel lines. And the damn beast flew! Went up like an elevator, very slowly, to sixty feet. Then it fell down and broke a leg."

The "broken leg"—one of the fuel lines—was easily repaired, and excess weight taken off as much as possible. The accidental flight had taken place on the 10th of May; on the 14th it was ready for its first planned flight. We launched it from two stovepipes stuck in the ground. No parachute was provided; we did not have one ready and were too eager to wait. Nor did we care greatly; it was, after all, only a makeshift design. Nor did we have spring-operated valves; the valves had to be opened by means of two "keys" mounted on broomsticks through the window of the second of the small buildings.

In spite of all this, the thing took off with a frightful roar, knocked against the roof of the building and raced up slantwise at an angle of about seventy degrees. After two or three seconds, it began to loop the loop, rose some more, spilled all the water out of the cooling jacket and came down in a power dive, burning a hole through the side of the motor and went completely crazy with two jets twirling it. It did not crash, it almost landed, since the fuel happened to be exhausted just when it was near the ground. We were dizzy from watching and jumping out of the way—and then were so exhausted with exhilaration that we sat down in the grass for a minute. Examination showed that it was intact save for the hole in the motor. My notes tell me that we estimated the peak at sixty meters—two hundred feet—then; in retrospect it seems as if all this took place much nearer the ground.

This was the beginning and end of *Repulsor No. 1.* The name *Repulsor* was taken straight from a novel by Kurd Lasswitz—we did anything not to use the word rocket, being constantly confused with Tiling and others who built large powder rockets, and we could not continue to use the term Mirak for these new machines.

Work on *Repulsor No. 2* began the same night. It was decided to eliminate the still-too-heavy struts, to do once more without a parachute and to provide tail fins in order to get a vertical flight. Otherwise there were no changes, except for the substitution of better valves. The four tail fins were attached to a circular aluminum hoop and were shaped like quarter circles, so that the repulsor could stand on the fins, needing neither stovepipes nor a regular launching rack.

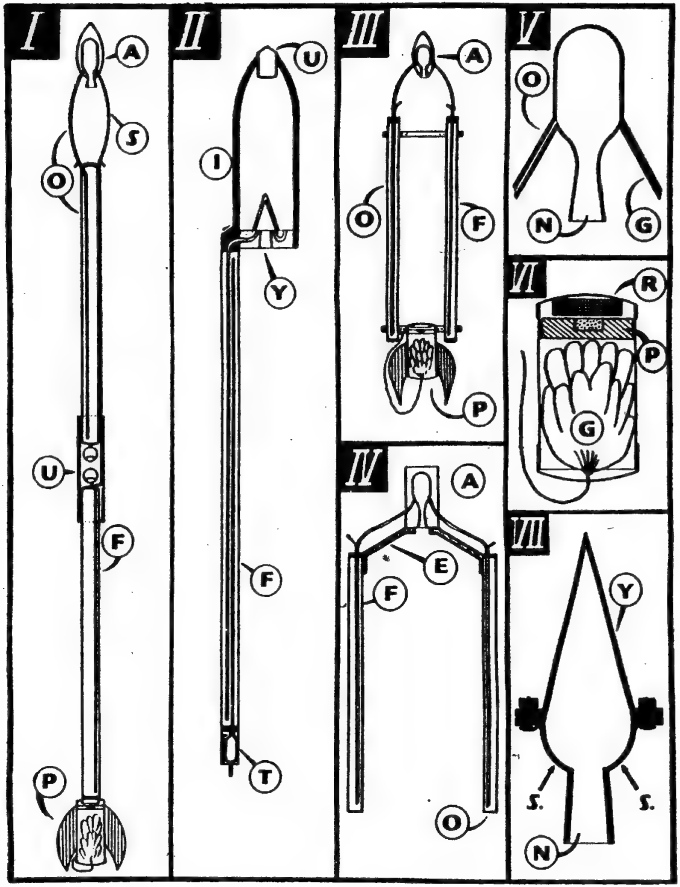
The new repulsor was ready for flight in the afternoon of Saturday, May 23, 1931. We always thought of this flight as of "the first" later on, probably because it was an exceptionally beautiful flight on an exceptionally beautiful afternoon. The repulsor was first fueled with oxygen only and a pressure gauge was screwed in instead of the infill plug. We had to find out how long the oxygen would need to build up the necessary pressure of three hundred pounds per square inch in that particular tank on that particular day. The time was about four and one half minutes. One of the mechanics then opened the valve which let the oxygen escape through the motor and the exhaust nozzle. He swore that he felt a noticeable recoil.

After the inevitable coffee and buttercake, we got it ready in earnest. While Riedel waited, watch in hand, for four and one half minutes, I climbed a low hill to have a vantage point from which I could not only see the repulsor but also look over most of the *Raketenflugplatz.* From down below, I heard the shout of "Ready! Fire!" and saw a white flame shoot out of the nozzle. The flame shortened at once, became less bright

and began to soar. Simultaneously, the repulsor rose, slowly at first, but accelerating steadily. It climbed to about two hundred feet and then turned sideways, like a car taking a curve. The rocket motor was still going full blast and the repulsor shot across the whole place, slowly losing altitude. It turned around its longitudinal axis in flight, the four aluminum fins reflected the red rays of the setting sun like signal lights. It flew over the fence and then encountered a tree trunk. We were in wild pursuit, by car, motorcycle and bicycle, expecting to see a horrible picture of accidental slaughter, but the repulsor had done no other harm than breaking a two-inch branch off a tree and then hanging entangled in lesser branches. The distance from take-off to tree was six hundred meters—two thousand feet. That night we wrote a very triumphant letter to Nebel, who was still in Kiel.

The flight of May 23rd decided everything. From now on it was repulsors. No. 3 was built within a few days, it was the first to get a parachute. The two fuel tanks were placed much nearer to each other, only some four inches apart and were held in place by two sets of aluminum braces that jutted out a little at either side, fitting into the U-aluminums screwed to a wooden launching rack. It made its first flight early in June, on a beautiful afternoon, and attained an altitude of at least fifteen hundred feet. At that moment, the parachute was ejected. But something went wrong; either the timing mechanism had not been set for the proper moment, or else the rocket carried more fuel than we thought. At any event, it was still climbing at a fast rate when the parachute blossomed out. It was torn off almost effortlessly, the rocket rose for at least another five hundred feet. All the parachute had done was to change the angle of ascent—the rocket had risen almost vertically before that accident—then it rose at a tilted angle of about sixty degrees. Describing an enormous arc, it landed like a heavy howitzer shell, by coincidence in the same clump of trees where No. 2 had found its end. It buried itself more than a foot deep in the hard forest soil, totally smashed.

Three more of type 3 were built simultaneously during the following two weeks and one or two more after that. They all made beautiful flights, but there were a few more parachute accidents of the same kind. One of those repulsor-



The Evolution of the Liquid Fuel Rockets of the German Rocket Society.

The diagrams on the above page show the main types of the liquid fuel rockets built and designed by the VfR. Except for No. II, they are drawn to scale and show the proper proportions, as do the diagrams of design detail (No. V, VI and VII).

The first in a chronological order is No. II. This drawing shows the second Mirak. It is out of scale on two points. The "tail," actu-

ally an aluminum tube, should be not quite twice as long as shown, while the whole rocket, as compared with No. I should be only about two thirds the size shown. The head (I) consisted of cast aluminum, machined down to proper size. It was the liquid oxygen container. (U) is a safety valve, screwed in at the nose; it served at the same time as infill plug. The bottom part (Y) was solid copper. The tail (F) was an aluminum tube about ¾" in diameter—outside—with two thin aluminum tubes inside. One, reaching down to the bottom, carried the fuel—gasoline—into the combustion chamber, while the other carried carbon dioxide gas to the top of the tail. The gas came from a commercial CO_2 cartridge inserted in the extreme tail end. The first Mirak looked very similar to this design. Both Miraks burst because the oxygen pressure mounted up too rapidly in (I) for the valve to handle. The third Mirak was never completed. It was to have two tails, the second as container for compressed CO_2.

The first Repulsor (No. IV) was purely experimental. It had the new-type rocket motor in an open water container (A) with two tubular tanks, for gasoline (F) and for liquid oxygen (O). Both tanks were magnesium alloy—"Elektron"—tubing with welded-on end pieces. (E) were two struts. It was actually planned as a small test stand and flew accidentally, smashing up because of poor cooling system and lack of parachute. The second Repulsor differed from the first only in a few respects: the cooling jacket had a tightly fitting lid, the struts had been omitted, the valves were spring operated and four tail fins had been added. After it flew—and smashed—the third Repulsor was built. (No. III.) It was an improved design of the second, with spring-operated valves and parachute container added. The two tanks were spaced more closely together. At least four of this third model were built for demonstration flights, some smashed up because the parachute had a tendency to tear off; it was mainly a question of insufficient strength of the materials used.

No. I shows the so-called One-Stick-Repulsor, which evolved out of the earlier so-called Two-Stick-Repulsors by placing the two tanks in line. (A) is the rocket motor with closed water jacket, (O) the oxygen tank and oxygen feed line, (S) is the fuel feed line which led down along and outside the oxygen tank into the connecting piece (U) and into the fuel tank (F). The vaned parachute container (P) was attached to the bottom of the fuel tank. The material for the rocket motor, the parachute container, the fuel lines and the connecting piece was aluminum, that of the tanks, magnesium alloy. At tempts to make the connecting piece of plastics were not successful then. Two round "windows" cut into the connecting piece permitted watching the pressure gauges. In all Repulsors CO_2 gas under pressure was put into the fuel tank—which always was about two thirds empty—while the oxygen was permitted to build up its own pressure. The valves were released when the oxygen pressure had reached the proper level of two hundred fifty to three hundred pounds per square inch. Infill plugs and gas infill valves have been omitted for reasons of clarity.

No. V shows the so-called standard rocket motor, made in two pieces of spun aluminum and welded together with solid rods—later bored—for fuel intakes welded on. (O) is the oxygen line, (G) the gasoline line and (N) the exhaust nozzle. The cooling water jacket was welded around the finished motor, after it had made a ninety-second test run on the proving stand, inserted into a cooling water jacket with running water. Running water was not required for the much shorter runs during actual flight. These flights were never permitted to carry higher than one mile at the most, for reasons of safety as well as for purposes of observation. It is estimated that a One-Stick-Repulsor of this type could have attained three miles altitude when fully fueled. I regret that this experiment was never made, but it would have involved a long and expensive trip to the seashore. Four or five Repulsors of this type were built, each made about six or seven flights. The next step were two enlarged models of the same type, they also performed well but not in proportion to their increased size. A large Four-Stick-Repulsor performed well as far as the functioning of the rocket was concerned, but proved unstable in air.

No. VI is the parachute release adopted after only a few experiments with purely mechanical types that proved unreliable. (G) is the folded parachute in an aluminum container, (R) is a timing device of the same type as used by photographers, activated by the rocket itself. After the lapse of the calculated number of seconds the timing device firing a small black-powder charge embedded in the cork plate (P). This cork disk served as a piston, pushing the parachute out. The lid of the parachute fitted loosely and was threaded by the main shroud so that nothing but the cork disk was lost. We disliked this mixture of mechanical and pyrotechnical principles, but it was the only one that functioned reliably. Purely mechanical contraptions were usually too heavy or too complicated and the electrical devices invented by the carload by VfR members either failed completely or were subject to the same objections. Incidentally: these objections would disappear automatically if a design for large rockets were needed.

No. VII shows Professor Oberth's *Kegeldüse*. It was made of steel with thick copper lining. The two parts were clamped together by bolts, a ring of pure copper providing obturation. During the certified test a copper asbestos gasket was used; it was not superior, but the testing committee insisted on it for reasons unknown. (Y) is the conical part of the assembly, (N) the exhaust nozzle, while the arrows (S. S.) show the points where the fuel injection nozzles were screwed in. An earlier test with keramic lining failed, the lining cracked and one piece partly blocked the exhaust so that the exhaust nozzle and the lower part of the hemispherical section were blown off.

minus-parachute crashed on the roof of a shack belonging to the police garrison, with results both awkward and funny. We realized that the timer should go off too late rather than too early; only Nebel could not quite see why. Incredible as it may sound, he never felt on firm ground when it came to visualizing the interplay of forces that create a trajectory. In fact he did not want to: "An aviator must have nothing but contempt for ballistics."

Our crew still grew, the *Raketenflugplatz* offered shelter, food and a little pocket money to unemployed mechanics and by that time the number of unemployed was enormous. One group was kept busy preparing the dugout and doing several other similar tasks of purely manual labor. Another group worried about the *Aepyornis Egg*, as I called it, the 64-kg. motor and the old nucleus took one of the repulsors apart and made it over into the last type that performed really well. This was the so-called one-stick repulsor—the old ones were consequently called two-stick repulsors—with both tanks placed in line. The first one-stick repulsor flew in August, 1931, reaching an altitude of about one kilometer, eleven hundred yards. At that altitude it was only a small dot in the sky, suddenly there was a tiny white parachute and the rocket drifted gracefully back to the ground.

More one-stick models were built, each one refined somewhat at one end or the other, two of them larger in size but with the same standard motor. Meanwhile, the *Aepyornis Egg* had failed to live up to expectations, but had done well enough to leave room for doubt whether the partial failure was not, perhaps, a failure of this particular motor and not of the type. Some among the standard type did not do so well, either. At any event, the step of designing a still bigger model seemed justified.

But things did not go well any more. The VfR stopped growing, no new membership dues came in. Those who had paid in the beginning of the year had usually paid for the full year; many of them declared that they would not be able to continue as members. The lists had shrunk to about three hundred. To make things worse, Hugo A. Hückel refused to continue his contributions. It probably wasn't anybody's fault, but we felt inclined to blame Winkler, which, I now believe, was somewhat unjust, but it looked probable then.

Winkler's second confidential job had not been a job in the customary sense of the word. He had enlisted Hückel's financial support to set himself up as a private rocket experimenter. He was a short but rather stout, quiet man with an exceptionally soft voice and careful and deliberate enunciation which somehow was convincing. And if he lacked anything it was certainly not patience. Winkler would never overlook a single aspect of a complex situation, carefully and pedantically he would investigate every one of them. He would not use rivets anywhere by rule of thumb of experience; he would calculate first the smallest and lightest kind that would be strong enough—then compare the weight with that of a welding seam. He did that whether it was necessary in a given case or not. He was a slow, deliberate and careful worker and at least half of what he did was necessary, but he succeeded in depriving the VfR of the honor of sending the first European liquid fuel rocket into the air. His was the first. It was a simple affair, but it flew, rising to an altitude of two thousand feet, according to Winkler. The date was March 14, 1931, the place a field near Dessau. The rocket looked like a prism placed on end, with a fuel tube along each edge, partly covered with sheet aluminum much in the manner of the old box kites. One tube held liquid methane—I had told him that Oberth wanted to use CH_4—one held liquid oxygen and the third a compressed inert gas, CO_2 or nitrogen. The rocket motor consisted simply of a piece of seamless steel

tubing, placed in the center line.

Hückel continued to subsidize Winkler as well as the VfR until he suddenly cut the VfR off. It was difficult to do anything about it since Hückel, while active mentally and a good-looking middle-aged man, was a hopeless cripple. He could not walk at all and was not even to be moved. But some time later he came to Berlin for treatment and we had a three-cornered conference, consisting of Hückel, Winkler and the VfR, the latter represented by Nebel, Riedel and I. The result was that Hückel promised to continue his contributions, but sporadically, if and when he could afford it. Winkler, it seems, had first call, he came to the *Rakentenflugplatz* for a few weeks, renting one small building which he kept locked all the time, making weird experiments nobody could understand. The result of all this was his second rocket, generally a copy of the Oberth rocket, with two spherical tanks for oxygen and methane. It was ready early in 1932, but he traveled around the country with it for months, exhibiting it and being most secretive at the same time—a difficult trick, but he managed—until he finally tested it on October 6, 1932, near Pillau in East Prussia. It did not work at all at the first attempt, I have been told, at the second a fuel line broke when the rocket was ten feet above the ground and the very light and very complicated rocket was completely smashed, Winkler said with tears in his eyes that not a single line, gauge or part was usable any more.

Things did not go well any more. It was not so much Winkler's competition which somehow attracted little notice. Reinhold Tiling's powder rockets with four long fins, two of which spread out at the peak of the flight to change the rocket into a model glider airplane got much more publicity. I did not worry about that much, either, knowing that Tiling built about the largest size possible for powder fuel. (He died on October 11, 1933, together with his assistant, Friedrich Kuhr and his secretary, Angelika Buddenböhmer, in an explosion of his laboratory.)

My real worry was not Winkler, not Tiling, not money, but Nebel. Like many men of small stature he suffered from an inferiority complex of great magnitude. It was emphasized by the realization that he had never really learned anything. One of these "defects" was entirely imaginary and the other was not too important; but his overcompensation for them became an unbearable defect. At meetings he either sulked or dominated the meeting with recounting his accomplishments, past and present, in a loud and accented voice, surprisingly much like Hitler's. And since his war experience—real or imaginary—was his main accomplishment, he assumed the air of a Prussian officer, a warrior. "When those Bavarians try to be Prussians it's awful," Major von Dickhuth once said to me while we were discussing science-fiction over a big pot of coffee. And Riedel had a hard time holding the mechanics at the *Raketenflugplatz,* some of them were socialists and pacifists and did not want to work with such a man.*

But it was not Nebel's genetral attitude toward his fellow workers that constituted my main worry, it was the fact that he discredited himself and the whole society by making untenable assertions. When Oberth's *Kegeldüse* was on exhibit Nebel claimed that its recoil was "equivalent to 1,800 h. p." and had a sign to that effect painted. That the rating of rocket motors in h. p. is senseless, to put it mildly, did not matter. At a time when nobody could even form an approximately correct conception of the probable size and shape of an instrument-carrying meteorological rocket Nebel promised that man-carrying rockets could be built on short notice and he began a discussion of the theory of the station in space with the words:

*This is the reason why I omitted their names all the way through. In case the Gestapo gets hold of a copy of this article I'll let them wonder who thought what.

"Judging from our recent experience in this matter—"

His behavior had the result that nobody worked on the *Raketenflugplatz* as long as he was around; the men fiddled with their tools and plainly loafed until they heard his car roar off. Barely six months after the founding of the *Raketenflugplatz* they had lost what enthusiasm they had had originally and it was not due to lack of progress. The outrageous sales talks led to many a clash among the leading men of the society. When I cautioned him that the claims he made could not possibly be substantiated he just laughed: "That doesn't matter, advertising and science are two different things. I'm a specialist in successful salesmanship." But the success was always short-lived. He did get a lot out of people in the way of donations, but he never got anything more than once.

In the beginning he had been a somewhat noisy man with a few faults, then he changed for the worse. Riedel and I once tried to trace the date of the change. We found it; it was his return from Kiel and we wondered what had happened on that trip. Now I know, but I realized it only when I began to think about this article; we had made the first flights in his absence and announced them: he could not possibly take credit for the repulsors! The change showed at once, at the first meeting he scolded me for keeping the agreement I had signed at the occasion of Mr. Pendray's visit. It concerned mutual exchange of information. "But, Nebel, you were present when we talked, I told you that I signed it." "Sure, but I thought that we let *them* keep it, now you keep it yourself, too. Where's the advantage?" I continued to keep the agreement. I kept it with Rynin, too, I became known as a "xenophile," a man who keeps up correspondence with foreigners.

To the public it still looked as if we were "in all the rooms." When the *Raketenflugplatz* was one year old the UFA devoted a large portion of its newsreel—it was No. 60, there was one every week and they were numbered—to a flight of a one-stick repulsor and a test run of the *"Aepyornis Egg."* During the filming of that newsreel we had the accident mentioned: a repulsor fell on a shack belonging to the police garrison. But the order prohibiting rocket flights was withdrawn on October 17th under the following conditions:

A. The weight of the rocket with fuel must not exceed eleven pounds.

B. The rocket motor used must have made three flawless test runs.

C. Heavier rockets require special permit.

D. Flights must be made only on workdays between 7 a. m. and 3. p. m.

E. No rocket flights on windy days

These were very sensible precautions, considering that we were working inside city limits By that time eighty-seven flights had been made and two hundred seventy test runs of motors, not counting the Miraks at all.

And that newsreel was virtually the last triumph of the VfR, everything after that was rapid decline. The economic depression that led to Hitler moved on relentlessly, the political tension grew. Many members declared that they could not pay dues any more; they had to donate their money to the Fuehrer. The winter itself was unusually severe and prevented all outdoor work. I went on that short and strenuous lecture tour I mentioned; it built three more repulsors. And then I saw that we were no longer "in all the rooms." Somebody else was: the busily plotting German army. Suddenly they supervised everything, unseen, but efficiently. And some of Oberth's and Nebel's claims worked nicely into ther hands. Both had talked and written a lot about war rockets, and many people had believed it.

The program of the VfR had been entirely different, it had aimed at the creation of the spaceship as the ultimate goal, emphasizing that some in-between stages would be commercially useful:

the altitude rocket which would gather data on the stratosphere beyond reach of meteorological balloons and the long-distance mail rocket. Oberth held and, the last I heard of him, still holds the belief that a long-distance mail rocket could be made to hit within a hundred yards over two thousand miles. I doubt this very much and so do most of the others who have studied the problem. Nebel brushed the factual question aside, "if we say it does, we'll get army money to try it." Everybody, with no exception, opposed him. I went in for a long study of ballistics and firearms which convinced me—much later—that rockets in battle can never be as efficient as guns in battle. At ranges which can be attained by guns as well as by rockets, the gun is immensely superior in accuracy and at ranges beyond gun range the bombing airplane can carry an immensely superior load. There is no future for war rockets, except for those minor applications which they are finding at present, like sending trailing wires up into the air to tangle dive bombers—British—or firing a dozen shells at very close range at one volley to confuse tank commanders—Russian. I suspected this then, but I did not have enough data to argue. (That study is responsible for my "War Weapons" column in the newspaper *PM* and for my two books "Bombs and Bombing" and "Shells and Shooting.")

I had another reason to contradict because a luckless inventor had just told me a tale of woe. He had invented something—I believe it was a new type internal-combustion engine—with which he approached the Reich Defense Ministry. They saw some possibilities in his invention and he was at once subjected to the following orders: He had to submit complete lists of all of his and his wife's relatives, lists of all their friends, lists of all restaurants and theaters they frequented. Then he was told what friends to drop, what relatives to avoid and what restaurants were forbidden. All this in deepest peace!

But Nebel would not listen to anything. He wrote a "confidential" article on "rocket artillery," the worst nonsense that was ever written. Putting a mimeographed copy of this masterpiece in his briefcase he visited Captain Becker, of Cranz-Becker: *Ballistics*. He never told what happened during that session, but the results were maddening. A burglary attempt—probably faked—was used as an excuse to fingerprint the residents of the *Raketenflugplatz*, strange restrictions took place, and Count von Braun, a member of the board of directors—the youngest of the lot—was made to accept a commission.

It was fortunate that Nebel had told the army that the VfR and the *Raketenflugplatz* were connected only by the accidental fact that he happened to be secretary of the VfR. Thus the VfR was not molested, nor did it harm otherwise since I did all the secretarial work, anyway, except that connected with demonstrations, lecturers, et cetera at the proving ground.

Times were bad, but still I wondered why the experimental work dragged the way it did. There were some more repulsor flights in 1932, about twenty, there were a lot of ground tests, mostly with bigger and bigger motors with more and more "bugs" in them. The slowness of experimental work looked—and to a certain extent was—natural. After the initial successes—what may be called the basic discoveries—came the state of tedious plodding research. The brightest part of the story was that two men with a complete education in engineering science had joined the staff: my friend Herbert Schaefer and somebody else. (He's still in Germany.) They did a lot of sound work, which, of course, did not satisfy Nebel's need for big progress.

Major von Dickhuth and I watched carefully. Something was wrong. But nothing tangible, yet. Nebel then told us that he could get money for a big project, but he, personally, not the VfR.

He wanted to undertake a venture of his own. We agreed.

But before I tell that most fantastic piece of the story I must relate what we learned later. The army did accept Nebel's offer in part, we found out, mainly through his own complaints. They ordered a demonstration of a one-stick repulsor which had to be rebuilt, because somebody insisted that a red flare be released simultaneously with the parachute. Everybody but Nebel prayed for failure; it happened to be a brilliant success. Nebel saw himself in a high position and was told that the army would go on and that he, for bringing it to their attention, would get contracts for the manufacture of one part, probably the parachute container!

Count von Braun augmented this story through more complaints.

He had been even more greatly disappointed. The essence of his tale was this: they used powder instead of liquid fuels, they have reached thirty thousand yards—I don't know whether vertical or horizontal—and they are giving up. I believe the first and especially the last of these statements, but doubt the second.

The end was dramatic: the Nazis came, they saved Nebel and the "big project." As far as we were directly concerned, the Nazis consisted of several young men, of the ripe old age of nineteen or thereabouts, with uniforms and collections of fantastic ribbons, with studied serious expressions and hoarse voices, equally studied. They were to reorganize the VfR, but they had poor luck. There were no bribes to be had and just accidentally all the members of the board of directors were "Aryans." What was worse for them: von Dickhuth caught on quickly and came to the meeting in full dress uniform with dress saber and a bunch of real decorations. He literally shouted them out of the house. The Nazis then went to the *Raketen-flugplatz* where Nebel quickly pledged five hundred marks for the "Adolf Hitler Sacrifice"—sending them back to us to collect. The VfR had twenty-four marks at that point. When I saw Nebel next he was in uniform with party insignia. I was angry, but not surprised.

Meanwhile the major and I had gone over Nebel's ledgers since one year had passed since the last accounting. The ledgers were in an awful state, but we could determine that two thousand marks were missing. On top of that we found that Nebel had sold tax-free gasoline to motorists at reduced prices and then not even paid the gasoline bills. There was no question of saving face or anything like that; we were obliged to submit the case to the district attorney. But . . . "Herr Major, this would mean a jail sentence and the man is forty years old. . . . Herr Major, the man is a former officer. . . . Herr Major, he wears the Party Armband. . . ."—the assistant district attorney did not—"Herr Major, although you are possibly right, I advise withdrawal, these are revolutionary times—" The assistant district attorney was thoroughly scared. Consequently von Dickhuth and I resigned as directors, but stayed members of the VfR—a VfR that existed only on paper.

And the big project? There was a group of cranks in Germany who maintained that the Earth was hollow, that we actually lived on the inside of the Earth. One of them, an engineer by the name of Mengering, wanted to prove the theory by a rocket ascent. If a rocket, going straight up continuously, would crash among the antipodes, the "hollow Earth" was proved. The fact that he lived in Magdeburg was important. Magdeburg is a proud city; a burgomaster of Magdeburg, Otto von Guericke proved the existence of air pressure. Magdeburg wanted more scientific achievements.

Mengering talked to the city fathers. They were too intelligent to believe the hollow-Earth nonsense, but they considered a man-carrying rocket. Nebel was asked whether it could be done and said: "Sure, I'll build you one. Will

be ready at Easter, 1933. Or, better, at Pentecost, or, if you don't want a holiday"—Pentecost is officially holiday in Germany—"Sunday after Pentecost." They agreed on the 11th of June, 1933.

But I'll let Schaefer tell that story, since he worked some sixty hours a week at the *Raketenflugplatz* during that period:

"The man-carrying rocket, called "Pilot Rocket" was to be a huge monster about twenty-five feet high with a rocket motor of six hundred kilograms —thirteen hundred pounds—thrust. The passenger cabin and the fuel tanks were to be one unit, shaped like a huge artillery shell while the other unit, comprising the rocket motor and the parachute, was a smaller 'shell' topping the bigger one. The rocket was supposed to reach an altitude of one kilometer—eleven hundred yards—at which point the parachute was to be ejected while the passenger—he was not a 'pilot' since he did not do anything—was to jump out with his own parachute.

"A smaller rocket of the same shape was to be built first; except for size it differed from the large one by having its parachute where the large one would have the passenger. This rocket was fifteen feet high and equipped with a rocket motor of two hundred kilograms —four hundred forty pounds—thrust.

"We all began to work feverishly although we knew that it would be impossible to get such rockets ready in the time interval agreed upon. But it meant an opportunity to build large rockets without being handicapped by lack of funds.* The actual work began around Christmas, 1932, four-hundred-forty-pound-thrust motors were designed and built and also a new test stand designed to take one thousand kilograms—twenty-two hundred pounds—rockets. That stand was ready in March, 1933, but one of the new motors was ready earlier and was tested on a provisional test stand on March 9th. It could be heard for miles. The big new stand actually worked for the first time on March 22nd. It worked to our full satisfaction. Three days later one of the motors exploded at the instant of ignition, the concussion was so bad that the eyeballs of the observers pained considerably. We had expected some such mishap and had eight such motors scheduled. For a week I spent all my time in the welding shop supervising the construction of them. The second motor exploded, also on ignition, on April 3rd. This was the last real explosion, but on three successive tests the exhaust nozzles burned through at the throat—the narrowest part. Some twenty test runs were made in April, the thrusts obtained varied between one hundred fifty and two hundred kilograms, depending on the fuel-oxygen ratios. Finally we considered that type of motor reliable.

"The City of Magdeburg hurried us and it was agreed to let the big rocket—but not the man-carrying—ascend on June 9th. A large launching rack was built in a cow pasture at Wolmirstedt near Magdeburg, it was thirty feet high. Then a series of mishaps began. The rocket could not be attended properly so far away from the workshops. On the morning of June 9th it was fired, the rocket began to rise slowly, but before she reached the top of the rack she began to slid down again, very slowly. The thrust was insufficient, the reason could not be found. Another attempt two days later was spoiled by a leaky gasket, the motor got only one quarter of the fuel it was supposed to get, the rocket roared for two minutes instead of thirty seconds, we approached to within ten feet. Of course the rocket did not move. Another test on June 13th also ended prematurely, when the rocket was six feet high a vent screw popped out and it fell back, getting no more fuel.

"We decided on a complete overhaul. After that new tests with all kinds of

*Nebel was to get fifteen thousand marks for the whole job, but since he could not fulfill the contract only a part of it was actually paid. I remember that Mengering stated later that it was thirty-two hundred marks.

little mishaps, once a valve froze tight, another time the ignition capsule was blown out before it ignited the rocket, a diaphragm in the fuel line burst, et cetera. Heavy rains interfered and warped the wooden launching rack, not enough to be noticed, unfortunately. The city accountants had not granted the expenditure of a metal rack. Thus, when the rocket finally did take off on June 29th, one of the rollers derailed and became stuck. The rocket just stripped it, but took off almost horizontally because of that. Losing altitude rapidly, the rocket made a belly landing one thousand feet from the rack, the motor still going full blast. It slithered for another thirty feet. It looked totally smashed, but the motor and the tanks were unhurt, only the casing, fuel lines, et cetera had been smashed."

The announcement of this flight resulted in the famous "Fischer Hoax" which originated in a London newspaper and which claimed that a man-carrying rocket had reached six miles' altitude on October 29, 1933, taking off from the island of Rügen in the Baltic. I have had to fight this hoax ever since, not a word of it is true.

There was an afterlude which is still of interest, I am falling back on Schaefer's notes again to relate it:

"We decided not to wait for another casing but converted the motor and the tanks into a four-stick repulsor, 7.5 feet high. This repulsor was tested on "Lover's Island"—official name on maps is Lindwerder—in Tegeler Lake near Berlin. She rose with terrific velocity to about three thousand feet, suddenly tilted over up there, made a few loops and came down in a power dive, landing some three hundred feet from the island in the water. The parachute was ejected at the last moment before striking, thus only minor damage was sustained. Another repulsor, same with minor modifications, tested from same island, July 21st. First try was unsuccessful, valve burst, after replacement and refueling repulsor took off. One oxygen valve failed to open, repulsor rose slowly and off balance, to about two hundred feet. Landed in water, only minor damage.

"The captain who owned "Lover's Island" objected, we scared his summer campers. We went to Schwielow Lake, used motor launch instead of island. Same type of repulsors. Test on Saturday, August 5, 1933, exploded soon after take-off. Next test same type repulsor, same place, August 11th. Seems that one valve did not open, horizontal flight, touching water. Sank in steamboat channel, only dredged and deep section of whole shallow lake. Rescue impossible. August 31st, same type, same place. Flew away, could not be found again.

"September 9th and 18th. Two tests with new design, two-sticker with very long tanks and two-hundred-kilogram motors. Same place. Both poor."

And, as a last spotlight on the situation, I quote another one of Schaefer shorthand entries:

"Nebel had hoped that by stringing along with uniformed organization he could achieve something. All he achieved was that they "took over," the sound of marching boots became common on the proving ground, we were asked to join the organization—I and some others refused which caused a lot of friction—and a young man with high boots, a blue uniform and an arrogant bearing, became some sort of an overseer. Most of us looked right through him."

Finally the Gestapo seized papers, journals, books, probably the equipment, too. The men who had worked on the proving ground were given jobs, mainly in industrial firms like Siemens. I left Germany with the end of 1934 and early in 1935 a daring editor wrote me that the press had been forbidden even to print the word "rocket," no matter in what sense or connection. And four weeks later somebody overheard a telephone conversation with the Army Ministry. It contained the sentence:

"Now all the rocket people are on ice, we can see what they are doing."

Half a year later Schaefer joined me in New York.

I know that after all this I'm expected to add something to that story, an analysis of some sort, an explanation which says that the story would have ended differently if this and that had been done in time. Something that reads: IF Oberth had been more adaptable and better suited to deal with people, if he had been more of a modern scientist and less of a backwoodsman who accidentally was a genius—THEN he would not have picked the wrong people and— I have mourned myself occasionally that I was ten years too young then, that everything had happened. happened to me for the first time —but even with one or both of these impossible assumptions the end would have been Hitler.

That question doesn't work. Another one is permissible, however. Could the work be carried on elsewhere by the same means? I know this also implies that there is no Hitler, but we'll drop that point. The answer to that question is that this means, a society cannot work again. The more time I had to think about it the more have I arrived at the conclusion that the VfR progressed as far as any society can possibly progress. Experimentation had reached a state where continuation would have been too expensive for any society, except a millionaire's club—but if you go to millionaires you need only one.

On the *Raketenflugplatz* we did everything that could be done on a small scale. We developed perfect rocket motors, even the large sizes were close to perfection, while the small sizes could hardly be improved. The smaller repulsors worked perfectly, mishaps were just that, not basic faults. We were about ready for the first designs of meteorological rockets when the Nazis marched in. From the first experimental to a definite commercial design it would have been a little over a year, two years if you want to be careful.

BUT—we probably could not have paid for it, not under the most favorable of assumptions.

It is my estimate that a quick rehash of the work done and to forge on to the meteorological rocket from there would require some thirty thousand dollars per year for the first three years, more later.

At present the problem has to rest until Hitler is dead—after the war we'll see. At any event I believe as firmly as ever in the feasibility of the first practical step, the instrument-carrying high-altitude rocket. And I have never for a moment stopped believing in the ultimate goal: the spaceship. WILLY LEY.

THE END.

Robinc

by H. H. Holmes

Politics and robots are, alike, very curious things. But they're alike in another way—if you look at things straight, and don't throw out answers even if they do seem more than a little screwy, you can use them effectively—

Illustrated by Kramer

You'd think maybe it meant clear sailing after we'd got the Council's O. K. You'd maybe suppose that'd mean the end of our troubles and the end of android robots for the world.

That's what Dugg Quinby thought, anyway. But Quinby may have had a miraculous gift of looking straight at problems and at things and at robots and getting the right answer; but he was always too hopeful about looking straight at people. Because, like I kept saying to him, people aren't straight, not even to themselves. And our future prospects weren't anywhere near as good as he thought.

That's what the Head of the Council was stressing when we saw him that morning just after the Council had passed the bill. His black face was sober —no trace of that flashing white grin that was so familiar on telecasts. "I've put your bill through, boys," he was saying. "God knows I'm grateful—the whole Empire should be grateful to you for helping me put over the renewal of those Martian mining concessions, and the usuform barkeep you made me is my greatest treasure; but I can't help you any more. You're on your own now."

That didn't bother Quinby. He said, "The rest ought to be easy. Once people understand what usuform robots can do for them—"

"I'm afraid, Mr. Quinby, it's you who don't quite understand. Your friend here doubtless does; he has a more realistic slant on things. But you—I wouldn't say you idealize people, but you flatter them. You expect them to see things as clearly as you do. I'm afraid they usually don't."

"But surely when you explained to the Council the advantages of usuforms—"

"Do you think the Council passed the bill only because they saw those advantages? They passed it because I backed it, and because the renewal of the Martian concessions have for the moment put me in a powerful position. Oh, I know, we're supposed to have advanced immeasurably beyond the political corruption of the earlier states; but let progress be what it may, from the cave man on up to the illimitable future, there are three things that people always have made and always will make: love, and music, and politics. And if there's any difference between me and an old-time political leader, it's simply that I'm try-

ing to put my political skill at the service of mankind."

I wasn't listening too carefully to all this. The service of mankind wasn't exactly a hobby of mine. Quinby and the Head were all out for usuforms because they were a service to man and the Empire of Earth; I was in it because it looked like a good thing. Of course you can't be around such a mixture of a saint, a genius, and a moron as Quinby without catching a little of it; but I tried to keep my mind fixed clear on what was in it for me.

And that was plenty. For the last couple of centuries our civilization had been based on robots—android robots. Quinby's usuform robots—Q. U. R.—robots shaped not as mechanical men, but as independently thinking machines formed directly from their intended function—threatened the whole robot set-up. They were the biggest thing since Zwergenhaus invented the mechanical brain, and I was in on the ground floor.

With the basement shaking under me.

It was an android guard that interrupted the conference here. We hadn't really got started on usuform manufacture yet, and anyway, Quinby was inclined to think that androids might be retained in some places for guards and personal attendants. He said, "Mr. Grew says that you will see him."

The Head frowned. "Robinc has always thought it owned the Empire. Now Mr. Grew thinks he owns me. Well, show him in." As the guard left, he added to us, "This Grew-Quinby meeting has to take place some time. I'd rather like to see it."

The president-owner of Robinc—Robots Incorporated, but nobody ever said it in full—was a quiet old man with silvery hair and a gentle sad smile. It seemed even sadder than usual today. He greeted the Head and then spoke my name with a sort of tender reproach that near hurt me.

"You," he said. "The best trouble-shooter that Robinc ever had, and now I find you in the enemy's camp."

But I knew his technique, and I was armed against being touched by it. *"In* the enemy's camp?" I said. "I *am* the enemy. And it's because I was your best trouble-shooter that I learned the real trouble with Robinc's androids: They don't work, and the only solution is to supersede them."

"Supersede is a kind word," he said wistfully. "But the unkind act is destruction. Murder. Murder of Robinc itself, draining the lifeblood of our Empire."

The Head intervened. "Not draining, Mr. Grew, but transfusing. The blood stream, to carry on your own metaphor, is tainted; we want fresh blood, and Mr. Quinby provides it."

"I am not helpless, you know," the old man murmured gently.

"I'm afraid possibly you are, sir, and for the first time in your life. But you know the situation: In the past few months there has been an epidemic of robot breakdowns. Parts unnecessary and unused, but installed because of our absurd insistance on an android shape, have atrophied. Sometimes even the brain has been affected; my own confidential cryptanalyst went totally mad. Quinby's usuforms forestall any such problem."

"The people will not accept them They are conditioned to androids."

"They must accept them. You know, better than most, the problems of supply that the Empire faces. The conservation of mineral resources is one of our essential aims. And usuforms will need variously from seventy to only thirty percent of the metal that goes into your androids. This is no mere matter of business rivalry; it is conflict between the old that depletes the Empire and the new that strengthens it."

"And the old must be cast aside and rejected?"

"You," I began, "have, of course, always shown such tender mercy to your business compet—" but Quinby broke in on me.

"I realize, Mr. Grew, that this isn't fair to you. But there are much more important matters than you involved."

"Thank you." The gentle old voice was frigid.

"But I wouldn't feel right if you were simply, as you put it, cast aside and rejected. If you'll come to see us and talk things over, I'm pretty sure we can—"

"Sir!" Sanford Grew rose to his full short height. "I do not ask favors from puppies. I have only one request." He turned to the Head. "The repeal of this ridiculous bill depriving Robinc of its agelong monopoly which has ensured the safety of the Empire."

"I'm sorry, Mr. Grew. That is impossible."

The hair was still silvery and the smile was still sad and gentle. But the words he addressed to us were, "Then you understand that this is war?"

Then he left. I didn't feel too comfortable. Saving the Empire is all very well. Being a big shot in a great new enterprise is swell. But a war with something the size of Robinc is not what the doctor usually orders.

"The poor man," said Quinby.

The Head flashed an echo of the famous grin. "No wonder he's upset. It's not only the threatened loss of power, I heard that yesterday his android cook broke down completely. And you know how devoted he is to unconcentrated food."

Quinby brightened. "Then perhaps we—"

The Head laughed. "Your only hope is that a return to a concentrated diet will poison him. You've no chance of winning over Sanford Grew alive."

We went from there to the Sunspot. "It's funny," Quinby used to say. "I don't much like to drink, but a bar's always good for heavy thinking." And who was I to argue?

Guzub, that greatest of bartenders, spotted us as we came in and had one milk and one straight whiskey poured by the time we reached our usual back table. He served them to us himself, with a happy flourish of his tentacles.

"What are you so beamish about?" I asked gruffly.

Guzub shut his middle eye in the Martian expression of happiness. "Begauze you boys are going to 'ave a gread zugzezz with your uxuvorm robods and you invended them righd 'ere in the Zunzbod." He produced another tentacle holding a slug of straight vuzd and downed it. "Good lugg!"

I glowered after him. "We need luck. With Grew as our sworn enemy, we're on the—"

Quinby had paper spread out before him. He looked up now, took a sip of milk, and said, "Do you cook?"

"Not much. Concentrates do me most of the time."

"I can sympathize with Grew. I like old-fashioned food myself and I'm fairly good at cooking it. I just thought you might have some ideas."

"For what?"

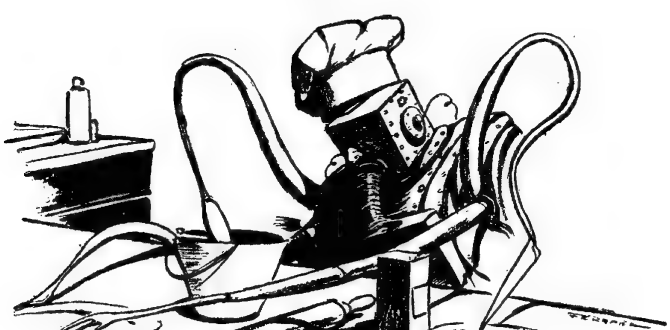
"Why, a usuform cook, of course. Grew's android cook broke down. We'll present him with a usuform, and that will convert him, too—"

"Convert hell!" I snorted. "Nothing can convert that sweetly smiling old— But maybe you have got something there; get at a man through his hobby— Could work."

"Now usually," Quinby went on, "androids break down because they don't use all their man-shaped body. But an android cook would go nuts because man's body isn't enough. I've cooked; I know. So we'll give the usuform more. For instance, give him Martoid tentacles instead of arms. Maybe instead of legs give him an automatic sliding height adjustment to avoid all the bending and stooping, with a roller base for quick movement. And make the tentacles functionally specialized."

"I didn't quite get that last, and I said so.

"Half your time in cooking is wasted



reaching around for what you need next. We can build in a lot of that stuff. For instance, one tentacle can be a registering thermometer. Tapering to a fine point—stick it in a roast and— One can end in a broad spoon for stirring—heat-resistant, of course. One might terminate in a sort of hand, of which each of the digits was a different-sized measuring spoon. And best of all—why the nuisance of bringing food to the mouth to taste? Install taste-buds in the end of one tentacle."

I nodded. Quinby's pencil was covering the paper with tentative hookups. Suddenly he paused. "I'll bet I know why android cooks were never too successful. Nobody ever included the Verhaeren factor in their brains."

The Verhaeren factor, if you've studied this stuff at all, is what makes robots capable of independent creative action. For instance it's used in the robots that turn out popular fiction—in very small proportion, of course.

"Yes, that's the trouble. They never realized that a cook is an artist as well as a servant. Well, we'll give him in his brain what he needs for creation, and in his body the tools he needs to carry it out. And when Mr. Grew has had his first meal from a usuform cook—"

It was an idea, I admitted, that might have worked on anybody but Sanford Grew—get at a man and convert him through what's dearest to his heart. But I'd worked for Grew. I knew him. And I knew that no hobby, not even his passion for unconcentrated food, could be stronger than his pride in his power as president of Robinc.

So while Quinby worked on his usuform cook and our foreman Mike Warren got our dowser ready for the first big demonstration, I went ahead with the anti-Robinc campaign.

"We've got four striking points," I explained to Quinby. "Android robots atrophy or go nuts; usuforms are safe. Android robots are almost as limited as man in what they can do without tools and accessories; usuforms can be constructed to do anything. Android robots are expensive because you've got to buy an all-purpose one that can do more than you need; usuforms save money because they're specialized. Android robots use up mineral resources; usuforms save them."

"The last reason is the important one," Quinby said.

I smiled to myself. Sure it was, but can you sell the people on anything as abstract as conservation? Hell no. Tell

'em they'll save credits, tell 'em they'll get better service, and you've got 'em signed up already. But tell 'em they're saving their grandchildren from a serious shortage and they'll laugh in your face.

So as usual, I left Quinby to ideas and followed my own judgment on people, and by the time he'd sent the cook to Grew I had all lined up the campaign that could blast Grew and Robinc out of the Empire. The three biggest telecommentators were all sold on usuforms. A major solly producer was set to do a documentary on them. Orders were piling up about twice as fast as Mike Warren could see his way clear to turning them out.

So then came the day of the big test.

We'd wanted to start out with something big and new that no android could possibly compete with, and we'd had the luck to run onto Mike's brother-in-law, who'd induced in robot brains the perception of that *n*th sense that used to enable dowsers to find water. Our usuform dowser was God's gift to explorers and fresh exciting copy. So the Head had arranged a big demonstration on a specially prepared field, with grandstands and fireworks and two bands—one human, one android—and all the trimmings.

We sat in our box, Mike and Quinby and I. Mike had a shakerful of Three Planet cocktails mixed by our usuform barkeep; they aren't so good when they stand, but they were still powerful enough to keep him going. I was trying to get along on sheer will power, but little streams of sweat were running down my back and my nails were carving designs in my palms.

Quinby didn't seem bothered. He kept watching the android band and making notes. "You see," he explained, "it's idiotic waste to train a robot to play an instrument, when you could make an instrument that *was* a robot Your real robot band would be usuforms, and wouldn't be anything but a flock of instruments that could play themselves. You could even work out new instruments, with range and versatility and flexibility beyond the capacity of human or android fingers and lungs. You could—"

"Oh, oh," I said. There was Sanford Grew entering our box.

The smile was still gentle and sad, but it had a kind of warmth about it that puzzled me. I'd never seen that on Grew's face before. He advanced to Quinby and held out his hand. "Sir," he said, "I have just dined."

Quinby rose eagerly, his blond head towering above the little old executive. "You mean my usuform—"

"Your usuform, sir, is indubitably the greatest cook since the Golden Age before the devilish introduction of concentrates. Do you mind if I share your box for this great exhibition?"

Quinby beamed and introduced him to Mike. Grew shook hands warmly with our foreman, then turned to me and spoke even my name with friendly pleasure. Before anybody could say any more, before I could even wipe the numb dazzle off my face, the Head's voice began to come over the speaker.

His words were few—just a succinct promise of the wonders of usuforms and their importance to our civilization—and by the time he'd finished the dowser was in place on the field.

To everybody watching but us, there was never anything that looked less like a robot. There wasn't a trace of an android trait to it. It looked like nothing but a heavy duralite box mounted on caterpillar treads.

But it was a robot by legal definition. It had a Zwergenhaus brain and was capable of independent action under human commands or direction. That box housed the brain, with its *n*th-sensory perception, and eyes and ears, and the spike-laying apparatus. For when the dowser's perception of water reached a certain level of intensity, it layed a metal spike into the ground. An exploring party could send it out on its own to survey the territory, then follow its

tracks at leisure and dig where the spikes were.

After the Head's speech there was silence. Then Quinby leaned over to the mike in our box and said "Go find water."

The dowser began to move over the field. Only the Head himself knew where water had been cached at various levels and in various quantities. The dowser raced along for a bit, apparently finding nothing. Then it began to hesitate and veer. Once it paused for noticeable seconds. Even Quinby looked tense. I heard sharp breaths from Sanford Grew, and Mike almost drained his shaker.

Then the dowser moved on. There was water, but not enough to bother drilling for. It zoomed about a little more, then stopped suddenly and definitely. It had found a real treasure trove.

I knew its mechanism. In my mind I could see the Zwergenhaus brain registering and communicating its needs to the metal muscles of the sphincter mechanism that would lay the spike. The dowser sat there apparently motionless, but when you knew it you had the impression of a hen straining to lay.

Then came the explosion. When my eyes could see again through the settling fragments, there was nothing in the field but a huge crater.

It was Quinby, of course, who saw right off what had happened. "Somebody," my numb ears barely heard him say, "substituted for the spike an explosive shell with a contact-fuse tip."

Sanford Grew nodded. "Plausible, young man. Plausible. But I rather think that the general impression will be simply that usuforms don't work." He withdrew, smiling gently.

I held Mike back by pouring the rest of the shaker down his throat. Mayhem wouldn't help us any.

"So you converted him?" I said harshly to Quinby. "Brother, the next thing you'd better construct is a good guaranteed working usuform converter."

The next week was the low point in the history of Q. U. R. I know now, when Quinby's usuforms are what makes the world tick, it's hard to imagine Q. U. R. ever hitting a low point. But one reason I'm telling this is to make you realize that no big thing is easy, and that a lot of big things depend for their success on some very little thing, like that chance remark of mine I just quoted.

Not that any of us guessed then how important that remark was. We had other things to worry about. The fiasco of that demonstration had just about cooked our goose. Sure, we explained it must've been sabotage, and the Head backed us up; but the wiseacres shook their heads and muttered "Not bad for an alibi, *but*—"

Two of three telecommentators who had been backing us switched over to Grew. The solly producer abandoned his plans for a documentary. I don't know if this was honest conviction or the power of Robinc; it hit us the same either way. People were scared of usuforms now; they might go *boom!* And the biggest and smartest publicity and advertising campaign of the past century was fizzling out *fff!* before our helpless eyes.

It was the invaluable Guzub who gave us our first upward push. We were drinking at the Sunspot when he said, "Ah, boys— Zo things are going wrong with you, bud you zdill gome 'ere. No madder wad abbens, beoble zdill wand three things: eading and dringing and—"

Quinby looked up with the sharp pleasure of a new idea. "There's nothing we can do with the third," he said. "But eating and drinking— Guzub, you want to see usuforms go over, don't you?"

"And remember," I added practically, "you've got a royalty interest in our robot barkeep."

Guzub rolled all his eyes up once and down once—the Martian trick of nodding assent.

"All right," said Quinby. "Practically all bartenders are Martians, the tentacles are so useful professionally. Lots of them must be good friends of yours?"

"Lodz," Guzub agreed.

"Then listen—"

That was how we launched the really appealing campaign. Words? Sure, people have read and heard millions upon billions of words, and one set of them is a lot like another. But when you get down to Guzub's three essentials—

Within a fortnight there was one of our usuform barkeeps in one bar out of five in the influential metropolitan districts. Guzub's friends took orders for drinks, gave them to the usuforms, served the drinks, and then explained to the satisfied customers how they'd been made—pointing out besides that there had *not* been an explosion. The customers would get curious. They'd order more to watch the usuform work. (It had Martoid tentacles and its own body was its shaker.) The set-up was wonderful for business—and for us.

That got at the men. Meanwhile we had usuform cooks touring the residential districts and offering to prepare old-fashioned meals free. There wasn't a housewife whose husband didn't say regularly once a week, "Why can't we have more old-fashioned food instead of all these concentrates? Why, my mother used to—"

Few of the women knew the art. Those of them who could afford android cooks hadn't found them too satisfactory. And husbands kept muttering about mother. The chance of a happy home was worth the risk of these dreadful dangerous new things. So our usuform cooks did their stuff and husbands were rapturously pleased and everything began to look swell. (We remembered to check up on a few statistics three quarters of an hour later—it seemed we had in a way included Guzub's third appeal after all.)

So things were coming on sweetly until one day at the Sunspot I looked up to see we had a visitor. "I heard that I might find you here," Sanford Grew

smiled. He beckoned to Guzub and said "Your oldest brandy."

Guzub knew him by sight. I saw one tentacle flicker hesitantly toward a bottle of mikiphin, that humorously named but none the less effective knockout liquor. I shook my head, and Guzub shrugged resignedly.

"Well?" Quinby asked directly.

"Gentlemen," said Sanford Grew, "I have come here to make a last appeal to you."

"You can take your appeal," I said, "and—"

Quinby shushed me. "Yes, sir?"

"This is not a business appeal, young men. This is an appeal to your consciences, to your duty as citizens of the Empire of Earth."

I saw Quinby looking a little bothered. The smiling old boy was shrewd; he knew that the conscience was where to aim a blow at Quinby. "Our consciences are clear—I think and trust."

"Are they? This law that you finagled through the Council, that destroyed what you call my monopoly—it did more than that. That 'monopoly' rested on our control of the factors which make robots safe and prevent them from ever harming living beings. You have removed that control."

Quinby laughed with relief. "Is that all? I knew you'd been using that line in publicity but I didn't think you expected us to believe it. There are other safety factors beside yours. We're using them, and the law still insists on the use of some, though not necessarily Robinc's. I'm afraid my conscience is untouched."

"I do not know," said Sanford Grew, "whether I am flattering or insulting you when I say I know that it is no use trying to buy you out at any price. You are immune to reason—"

"Because it's on our side," said Quinby quietly.

"I am left with only one recourse." He rose and smiled a gentle farewell. "Good day, gentlemen."

He'd left the brandy untouched. I finished it, and was glad I'd vetoed Guzub's miki.

"One recourse—" Quinby mused. "That must mean—"

I nodded.

But it started quicker than we'd expected. It started, in fact, as soon as we left the Sunspot. Duralite arms went around my body and a duralite knee dug into the small of my back.

The first time I ever met Dugg Quinby was in a truly major and wondrous street brawl, where the boy was a whirlwind. Quinby was mostly the quiet kind, but when something touched him off—and injustice was the spark that usually did it—he could fight like fourteen Martian mountaineers defending their idols.

But who can fight duralite? Me, I have some sense; I didn't even try. Quinby's temper blinded his clear vision for a moment. The only result was a broken knuckle and some loss of blood and skin.

The next thing was duralite fingers probing for the proper spots at the back of my head. Then a sudden deft pressure, and blackness.

We were in a workshop of some sort. My first guess was one of the secret workshops that honeycomb the Robinc plant, where nobody but Grew's most handpicked man ever penetrate. We were cuffed to the wall. They'd left only one of the androids to guard us.

It was Quinby who spoke to him, and straight to the point. "What happens to us?"

"When I get my next orders," the android said in his completely emotionless voice, "I kill you."

I tried to hold up my morale by looking as indifferent as he did. I didn't make it.

"The last recourse—" Quinby said.

I nodded. Then, "But look!" I burst out. "This can't be what it looks like. He can't be a Robinc android because he's going," I gulped a fractional gulp,

"to kill us. Robinc's products have the safety factor that prevents them from harming a living being, even on another being's orders."

"No," said Quinby slowly. "Remember that Robinc manufactures androids for the Empire's army? Obviously those can't have the safety factor. And Mr. Grew has apparently held out a few for his own bootleg banditti."

I groaned. "Trust you," I said. "We're chained up with a murderous android, and trust you to stand there calmly and look at things straight. Well, are you going to see straight enough to get us out of this?"

"Of course," he said simply. "We can't let Grew destroy the future of usuforms."

There was at least one other future that worried me more, but I knew there was no use bringing up anything so personal. I just stood there and watched Quinby thinking—what time I wasn't watching the android's hand hovering around his holster and wondering when he'd get his next orders.

And while I was waiting and watching, half scared sweatless, half trusting blindly in Quinby, half wondering impersonally what death was like—yes, I know that makes three halves of me, but I was in no state for accurate counting—while I waited, I began to realize something very odd.

It wasn't me I was most worried about. It was Dugg Quinby. Me going all unselfish on me! Ever since Quinby had first seen the nonsense in androids—no, back of that, ever since that first magnificrumptious street brawl, I'd begun to love that boy like a son—which'd have made me pretty precocious.

There was something about him—that damned mixture of almost stupid innocence, combined with the ability to solve any problem by his—not ingenuity, precisely, just his inborn capacity for looking at things straight.

Here I was feeling selfless. And here he was coming forth with the first at all tricky or indirect thing I'd ever known him to pull. Maybe it was like marriage—the way two people sort of grow together and average up.

Anyway, he said to the android now, "I bet you military robots are pretty good marksmen, aren't you?"

"I'm the best Robinc ever turned out," the android said.

I worked for Robinc; I knew that each of them was conditioned with the belief that he was the unique best. It gave them confidence.

Quinby reached out his unfettered hand and picked a plastic disk off the worktable. "While you're waiting for orders, why don't you show us some marksmanship? It'll pass the time."

The robot nodded, and Quinby tossed the disk in the air. The android grabbed at its holster. And the gun stuck.

The metal of the holster had got dented in the struggle of kidnaping us. Quinby must have noticed that; his whole plan developed from that little point.

The robot made comments on the holster; military androids had a soldier's vocabulary built in, so we'll skip that.

Quinby said, "That's too bad. My friend here's a Robinc repair man, or used to be. If you let him loose, he could fix that."

The robot frowned. He wanted the repair, but he was no dope. Finally he settled on chaining my foot before releasing my hand, and keeping his own digits constantly on my wrist so he could clamp down if I got any funny notions about snatching the gun and using it. I began to think Quinby's plan was fizzling, but I went ahead and had the holster repaired in no time with the tools on the worktable.

"Does that happen often?" Quinby asked.

"A little too often." There was a roughness to the android's tones. I recognized what I'd run onto so often in trouble-shooting; an android's resentment of the fact that he didn't work perfectly.

"I see," Quinby went on, as casually

as though we were here on social terms. "Of course the trouble is that you have to use a gun."

"I'm a soldier. Of course I have to use one."

"You don't understand. I mean the trouble is that you have to *use* one. Now, if you could *be* a gun—"

It took some explaining. But when the android understood what it could mean to be a usuform, to have an arm that didn't need to snatch at a holster because it was itself a firing weapon, his eye cells began to take on a new bright glow.

"You could do that to me?" he demanded of me.

"Sure," I said. "You give me your gun and I'll—"

He drew back mistrustfully. Then he looked around the room, found another gun, unloaded it, and handed it to me. "Go ahead," he said.

It was a lousy job. I was in a state and in a hurry and the sweat running down my forehead and dripping off my eyebrows didn't help any. The workshop wasn't too well equipped, either, and I hate working from my head. I like a nice diagram to look at.

But I made it somehow, very crudely, replacing one hand by the chamber and barrel and attaching the trigger so that it would be worked by the same nerve currents as actuated the finger movements to fire a separate gun.

The android loaded himself awkwardly. I stood aside, and Quinby tossed up the disk. You never saw a prettier piece of instantaneous trapshooting. The android stretched his face into that very rare thing, a robot grin, and expressed himself in pungently jubilant military language.

"You like it?" Quinby asked.

All that I can quote of the robot's reply is "Yes," but he made it plenty emphatic.

"Then—"

But I stepped in. "Just a minute. I've got an idea to improve it." Quinby was probably trusting to our guard's gratitude; I wanted a surer hold on him. "Let me take this off just a second—" I removed the chamber and barrel; I still had his hand. "Now," I said, "we want out."

He brought up the gun in his other hand, but I said, "Ah, ah! Naughty! You aren't supposed to kill us till you get orders, and if you do they'll find you here with one hand. Fine state for a soldier. You can't repair yourself; you need two hands for it. But if we get out, you can come with us and be made over as much as you want into the first and finest efficient happy usuform soldier."

It took a little argument, but with the memory of that one perfect shot in his mind it didn't take much. As Quinby said afterward, "Robinc built pride into its robots to give them self-confidence. But that pride also gave them vanity

NEW SUCCESS OVER ATHLETE'S FOOT

NEW SCIENTIFIC 2-WAY TREATMENT WITH QUINSANA POWDER -ON FEET AND IN SHOES - IS PRODUCING AMAZING RESULTS. IN TESTS ON THOUSANDS OF PERSONS, PRACTICALLY ALL CASES OF ATHLETE'S FOOT CLEARED UP IN A SHORT TIME.

and dissatisfaction with anything less than perfection. That's what we could use. It was all perfectly simple—"

"—when you looked at it straight," I chorused with him.

"And besides," he said, "now we know how to lick Robinc forever."

That was some comfort, I suppose, though he wouldn't say another word to explain it. And I needed comfort, because just then things took a nasty turn again. We stuck close to our factory and didn't dare go out. We were taking no chances on more kidnapings before Quinby finished his new inspiration.

Quinby worked on that alone, secret even from us. I figured out some extra touches of perfection on the usuform soldier, who was now our bodyguard—Grew would never dare complain of the theft because he'd had no legal right to possess such an android, anyway. Mike and his assistants, both living and usuform, turned out barkeeps and dowsers and cooks—our three most successful usuform designs so far.

We didn't go out, but we heard enough. It was the newest and nastiest step in Grew's campaign. He had men following up our cooks and bartenders and managing to slip concentrated doses of ptomaine alkaloids into their products. No serious poisoning, you understand; just an abnormally high proportion of people taken sick after taking usuform-prepared food or drink. And a rumor going around that the usuforms secreted a poisonous fluid, which was objective nonsense, but enough to scare a lot of people.

"It's no use," Mike said to me one day. "We're licked. Two new orders in a week. We're done for. No use keeping up production."

"The hell we're licked," I said.

"If you want to encourage me, you'd ought to sound like you believed it yourself. No, we're sunk. While *he* sits in there and— I'm going down to the Sunspot and drink Three Planets till this one spins. And if Grew wants to kidnap me, he's welcome to me."

It was just then the message came from the Head. I read it, and knew how the camel feels about that last straw. It said:

> I can't resist popular pressure forever. I know and you know what Grew is up to; but the public is demanding re-enactment of the law giving Robinc exclusive rights. Unless Quinby can see straight through the hat to the rabbit, that re-enactment is going to pass.

"We'll see what he has to say to this," I said to Mike. I started for the door, and even as I did so Quinby came out.

"I've got it!" he said. "It's done." He read the Head's message with one glance, and it didn't bother him. He grabbed me by the shoulders and beamed. I've never heard my name spoken so warmly. "Mike, too. Come on in and see the greatest usuform we've hit on yet. Our troubles are over."

We went in. We looked. And we gawked. For Quinby's greatest usuform, so far as our eyes could tell, was just another android robot.

Mike went resolutely off to the Sunspot to carry out his threat of making this planet spin. I began to think myself that the tension had affected Quinby's clear-seeing mind. I didn't listen especially when he told me I'd given him the idea myself. I watched the usuform-android go off on his mysterious mission and I even let him take my soldier along. And I didn't care. We were done for now, if even Dugg Quinby was slipping.

But I didn't have time to do much worrying that morning. I was kept too busy with androids that came in wanting repairs. Very thoroughgoing repairs, too, that turned them, like my soldier, practically into usuforms. We always had a few such requests—I think I mentioned how they all want to be perfect—but this began to develop into a cloudburst. I stopped the factory lines and put every man and robot on repair.

Along about mid-afternoon I began to feel puzzled. It took me a little while to get it, and then it hit me. The last three that I'd repaired had been brand-new. Fresh from the Robinc factory, and rushing over here to be remade into . . . into usuforms!

As soon as I finished adjusting drill arms on the robot miner, I hurried over to where Quinby was installing an infra-red color sense on a soldier intended for camouflage-spotting. He looked up and smiled when he saw me. "You get it now?"

"I get what's happening. But how . . . who—"

"I just followed your advice. Didn't you say what we needed was a guaranteed working usuform converter?"

"I don't need to explain, do I? It's simple enough once you look at it straight."

We were sitting in the Sunspot. Guzub was very happy; it was the first time the Head had ever honored his establishment.

"You'd better," I said, "remember I'm a crooked-viewing dope."

"But it's all from things you've said. You're always saying I'm good at things and robots, but lousy at people because people don't see or act straight. Well, we were stymied with people. They couldn't see the real importance of usuforms through all the smoke screens that Grew threw up. But you admit yourself that robots see straight, so I went direct to them. And you said we needed a usuform converter, so I made one."

The Head smiled. "And what is the utile form of a converter?"

"He had to look like an android, because otherwise they wouldn't accept him. But he was the sturdiest, strongest android ever made, with several ingenious, new muscles. If it came to fighting, he was sure to make converts that way. And besides, he had something that's never been put in a robot brain before—the ability to argue and convince. With that, he had the usuform soldier as a combination bodyguard and example. So he went out among the androids, even to the guards at Robinc and from then on inside; and since he was a usuform converter, well—he converted."

The Head let the famous grin play across his black face. "Fine work, Quinby. And if Grew hadn't had the sense to see at last that he was licked, you could have gone on with your usuform converters until there wasn't an android left on Earth. Robinc would have toppled like a wooden building with termites."

"And Grew?" I asked. "What's become of him?"

"I think, in a way, he's resigned to his loss. He told me that since his greatest passion was gone, he was going to make the most of his second greatest. He's gone off to his place in the mountains with that usuform cook you gave him, and he swears he's going to eat himself to death."

"Me," said Mike, with appropriate business, "I'd like a damper death."

"And from now on, my statisticians assure me, we're in no danger of ever using up our metal stockpile. The savings on usuforms will save us. Do you realize, Quinby, that you're just about the most important man in the Empire today?"

That was when I first heard the band approaching. It got louder while Quinby got red and gulped. It was going good when he finally said, "You know, if I'd ever thought of that, I . . . I don't think I could have done it."

He meant it, too. You've never seen an unhappier face than his when the crowd burst into the Sunspot yelling "Quinby!" and "Q. U. R.!"

But you've never seen a prouder face than mine as I saw it then in the bar mirror. Proud of myself, sure, but only because it was me that discovered Dugg Quinby.

THE END.

Concealment

by A. E. van Vogt

He was willing to blow himself and his strange weather station—that watched the movement of millennium-long storms of inter-stellar space—to atoms to conceal the secret of his people. They were safe, concealed in the haystack of a hundred trillion stars,—unless he gave a clue!

Illustrated by Fax

The Earth ship came so swiftly around the planetless Gisser sun that the alarm system in the meteorite weather station had no time to react. The great machine was already visible when Watcher grew aware of it.

Alarms must have blared in the ship, too, for it slowed noticeably and, still braking, disappeared. Now it was coming back, creeping along, obviously trying to locate the small object that had affected its energy screens.

It loomed vast in the glare of the distant yellow-white sun, bigger even at this distance than anything ever seen by the Fifty Suns, a very hell ship out of remote space, a monster from a semi-mythical world, instantly recognizable from the descriptions in the history books as a battleship of Imperial Earth. Dire had been the warnings in the histories of what would happen someday—and here it was.

He knew his duty. There was a warning, the age-long dreaded warning, to send to the Fifty Suns by the non-directional subspace radio; and he had to make sure nothing telltale remained of the station.

There was no fire. As the overloaded atomic engines dissolved, the massive building that had been a weather substation simply fell into its component elements.

Watcher made no attempt to escape. His brain, with its knowledge, must not be tapped. He felt a brief, blinding spasm of pain as the energy tore him to atoms.

She didn't bother to accompany the expedition that landed on the meteorite. But she watched with intent eyes through the astroplate.

From the very first moment that the spy rays had shown a human figure in a weather station—a weather station *out here*—she had known the surpassing importance of the discovery. Her mind leaped instantly to the several possibilities.

Weather stations meant interstellar travel. Human beings meant Earth origin. She visualized how it could have happened: an expedition long go; it must have been long ago because now they had interstellar travel, and that meant large populations on many planets.

His majesty, she thought, would be pleased.

So was she. In a burst of generosity, she called the energy room.

"Your prompt action, Captain Glone," she said warmly, "in inclosing the entire meteorite in a sphere of protective energy is commendable, and will be rewarded."

The man whose image showed on the astroplate, bowed. "Thank you, noble lady." He added: "I think we saved the electronic and atomic components of the entire station. Unfortunately, because of the interference of the atomic energy of the station itself, I understand the photographic department was not so successful in obtaining clear prints."

The woman smiled grimly, said: "The man will be sufficient, and *that* is a matrix for which we need no prints."

She broke the connection, still smiling, and returned her gaze to the scene on the meteorite. As she watched the energy and matter absorbers in their glowing gluttony, she thought:

There had been several storms on the map in that weather station. She'd seen them in the spy ray; and one of the storms had been very large. Her great ship couldn't dare to go fast while the location of that storm was in doubt.

Rather a handsome young man he had seemed in the flashing glimpse she had had in the spy ray, strong-willed, brave. Should be interesting in an uncivilized sort of a fashion.

First, of course, he'd have to be conditioned, drained of relevant information. Even now a mistake might make it necessary to begin a long, laborious search. Centuries could be wasted on these short distances of a few light years, where a ship couldn't get up speed, and where it dared not maintain velocity, once attained, without exact weather information.

She saw that the men were leaving the meteorite. Decisively, she clicked off the intership communicator, made an adjustment and stepped through a transmitter into the receiving room half a mile distant.

The officer in charge came over and saluted. He was frowning:

"I have just received the prints from the photographic department. The blur of energy haze over the map is particularly distressing. I would say that we should first attempt to reconstitute the building and its contents, leaving the man to the last."

He seemed to sense her disapproval, went on quickly:

"After all, he comes under the common human matrix. His reconstruction, while basically somewhat more difficult, falls into the same category as your stepping through the transmitter in the main bridge and coming to this room. In both cases there is dissolution of elements—which must be brought back into the original solution."

The woman said: "But why leave him to the last?"

"There are technical reasons having to do with the greater complexity of inanimate objects. Organized matter, as you know, is little more than a hydrocarbon compound, easily conjured."

"Very well." She wasn't as sure as he that a man and his brain, with the knowledge that had made the map, was less important than the map itself. But if both could be had— She nodded with decision. "Proceed."

She watched the building take shape inside the large receiver. It slid out finally on wings of antigravity, and was deposited in the center of the enormous metal floor.

The technician came down from his control chamber shaking his head. He led her and the half dozen others who had arrived, through the rebuilt weather station, pointing out the defects.

"Only twenty-seven sun points showing on the map," he said. "That is ridiculously low, even assuming that these people are organized for only a small area of space. And, besides, notice how *many* storms are shown, some considerably beyond the area of the reconstituted suns and—"

He stopped, his gaze fixed on the shadowy floor behind a machine twenty feet away.

The woman's eyes followed his. A man lay there, his body twisting.

"I thought," she said frowning, "the man was to be left to the last."

The scientist was apologetic: "My assistant must have misunderstood. They—"

The woman cut him off: "Never mind. Have him sent at once to Psychology House, and tell Lieutenant Neslor I shall be there shortly."

"At once, noble lady."

"Wait! Give my compliments to the senior meteorologist and ask him to come down here, examine this map, and advise me of his findings."

She whirled on the group around her, laughing through her even, white teeth. "By space, here's action at last after ten dull years of surveying. We'll rout out these hide-and-go-seekers in short order."

Excitement blazed inside her like a living force.

The strange thing to Watcher was that he knew before he wakened why he was still alive. Not very long before.

He *felt* the approach of consciousness. Instinctively, he began his normal Dellian preawakening muscle, nerve and mind exercises. In the middle of the curious rhythmic system, his brain paused in a dreadful surmise.

Returning to consciousness? *He!*

It was at that point, as his brain threatened to burst from his head with shock, that the knowledge came of how it had been done.

He grew quiet, thoughtful. He stared at the young woman who reclined on a chaise longue near his bed. She had a fine, oval face and a distinguished appearance for so young a person. She was studying him from sparkling gray eyes. Under that steady gaze, his mind grew very still.

He thought finally: "I've been conditioned to an easy awakening. What else did they do—find out?

The thought grew until it seemed to swell his brainpan:

WHAT ELSE?

He saw that the woman was smiling at him, a faint, amused smile. It was like a tonic. He grew even calmer as the woman said in a silvery voice:

"Do not be alarmed. That is, not too alarmed. What is your name?"

Watcher parted his lips, then closed them again, and shook his head grimly. He had the impulse to explain then that even answering one question would break the thrall of Dellian mental inertia and result in the revolution of valuable information.

But the explanation would have constituted a different kind of defeat. He suppressed it, and once more shook his head.

The young woman, he saw, was frowning. She said: "You won't answer a simple question like that? Surely, your name can do no harm."

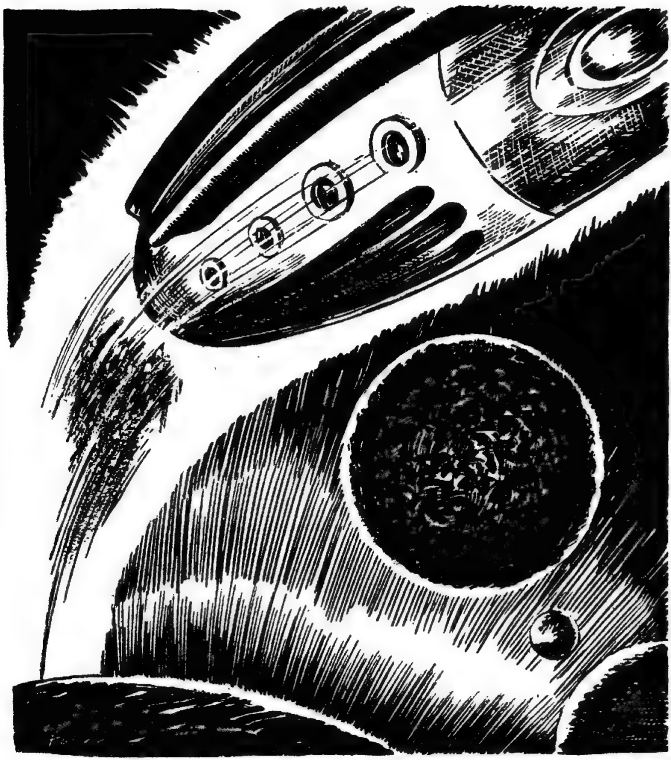
His name. Watcher thought, then what planet he was from, where the planet was in relation to the Gisser sun, what about intervening storms. And so on down the line. There wasn't any end.

Every day that he could hold these people away from the information they craved would give the Fifty Suns so much more time to organize against the greatest machine that had ever flown into this part of space.

His thought trailed. The woman was sitting up, gazing at him with eyes that had gone steely. Her voice held a metallic resonance as she said:

"Know this, whoever you are, that you are aboard the Imperial Battleship *Star Cluster,* Grand Captain Laurr at your service. Know, too, that it is our unalterable will that you shall prepare for us an orbit that will take our ship safely to your chief planet."

She went on vibrantly: "It is my solemn belief you already know that Earth recognizes no separate governments. Space is indivisible. The universe shall not be an area of countless sovereign peoples squabbling and quarreling for power.



"That is the law. Those who set themselves against it are outlaws, subject to any punishment which may be decided upon in their special case.

"Take warning."

Without waiting for an answer, she turned her head. "Lieutenant Neslor," she said at the wall facing Watcher, "have you made any progress?"

A woman's voice answered: "Yes, noble lady. I have set up an integer based on the Muir-Grayson studies of colonial peoples who have been isolated from the main stream of galactic life. There is no historical precedent for such a long isolation as seems to have obtained here, so I have decided to assume that they have passed the static period, and have made some progress of their own.

"I think we should begin very simply, however. A few forced answers will open his brain to further pressures; and we can draw valuable conclusions meanwhile from the speed with which he adjusts his resistance to the brain machine. Shall I proceed?"

The woman on the chaise longue nod-

ded. There was a flash of light from the wall facing Watcher. He tried to dodge, and discovered for the first time that *something* held him in the bed, not rope, or chain, nothing visible. But something as palpable as rubbery steel.

Before he could think further, the light was in his eyes, in his mind, a dazzling fury. Voices seemed to push through it, voices that danced and sang, and spoke into his brain, voices that said:

"A simple question like that—of course I'll answer . . . of course, of course, of course— My name is Gisser Watcher. I was born on the planet Kaider III, of Dellian parents. There are seventy inhabited planets, fifty suns, thirty billion people, four hundred important storms, the biggest at Latitude 473. The Central Government is on the glorious planet, Cassidor VII—"

With a blank horror of what he was doing, Watcher caught his roaring mind into a Dellian knot, and stopped that devastating burst of revelation. He knew he would never be caught like that again but—too late, he thought, too late by far.

The woman wasn't quite so certain. She went out of the bedroom, and came presently to where the middle-aged Lieutenant Neslor was classifying her findings on receptor spools.

The psychologist glanced up from her work, said in an amazed voice: "Noble lady, his resistance during the stoppage moment registered an equivalent of I. Q. 800. Now, that's utterly impossible, particularly because he started talking at a pressure point equivalent to I. Q. 167, which matches with his general appearance, and which you know is average.

"There must be a system of mind training behind his resistance. And I think I found the clue in his reference to his Dellian ancestry. His graph squared in intensity when he used the word.

"This is very serious, and may cause great delay—unless we are prepared to break his mind."

The grand captain shook her head, said only: "Report further developments to me."

On the way to the transmitter, she paused to check the battleship's position. A bleak smile touched her lips, as she saw on the reflector the shadow of a ship circling the brighter shadow of a sun.

Marking time, she thought, and felt a chill of premonition. Was it possible that one man was going to hold up a ship strong enough to conquer an entire galaxy?

The senior ship meteorologist, Lieutenant Cannons, stood up from a chair as she came toward him across the vast floor of the transmission receiving room, where the Fifty Suns weather station still stood. He had graying hair, and he was very old, she remembered, very old. Walking toward him, she thought:

There was a slow pulse of life in these men who watched the great storms of space. There must be to them a sense of futility about it all, a timelessness. Storms that took a century or more to attain their full roaring maturity, such storms and the men who catalogued them must acquire a sort of affinity of spirit.

The slow stateliness was in his voice, too, as he bowed with a measure of grace, and said:

"Grand captain, the Right Honorable Gloria Cecily, the Lady Laurr of Noble Laurr, I am honored by your personal presence."

She acknowledged the greeting, and then unwound the spool for him. He listened, frowning, said finally:

"The latitude he gave for the storm is a meaningless quantity. These incredible people have built up a sun relation system in the Lesser Magellanic Cloud, in which the center is an arbitrary one having no recognizable connection with

the magnetic center of the whole Cloud. Probably, they've picked some sun, called it center, and built their whole spatial geography around it."

The old man whirled abruptly away from her, and led the way into the weather station, to the edge of the pit above which poised the reconstructed weather map.

"The map is utterly worthless to us," he said succinctly.

"What?"

She saw that he was staring at her, his china-blue eyes thoughtful.

"Tell me, what is your idea of this map?"

The woman was silent, unwilling to commit herself in the face of so much definiteness. Then she frowned, and said:

"My impression is much as you described. They've got a system of their own here, and all we've got to do is find the key."

She finished more confidently: "Our main problems, it seems to me, would be to determine which direction we should go in the immediate vicinity of this meteorite weather station we've found. If we chose the wrong direction, there would be vexatious delay, and, throughout, our chief obstacle would be that we dare not go fast because of possible storms."

She looked at him questioningly, as she ended. And saw that he was shaking his head, gravely:

"I'm afraid," he said, "it's not so simple as that. Those bright point-replicas of suns look the size of peas due to light distortion, but when examined through a metroscope they show only a few molecules in diameter. If that is their proportion to the suns they represent—"

She had learned in genuine crises to hide her feelings from subordinates. She stood now, inwardly stunned, outwardly cool, thoughtful, calm. She said finally:

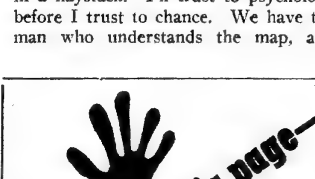
"You mean each one of those suns, their suns, is buried among about a thousand other suns?"

"Worse than that. I would say that they have only inhabited one system in ten thousand. We must never forget that the Lesser Magellanic Cloud is a universe of fifty million stars. That's a lot of sunshine.",

The old man concluded quietly: "If you wish, I will prepare orbits involving maximum speeds of ten light days a minute to all the nearest stars. We may strike it lucky."

The woman shook her head savagely: "One in ten thousand. Don't be foolish. I happen to know the law of averages that relates to ten thousand. We would have to visit a minimum of twenty-five hundred suns if we were lucky, thirty-five to fifty thousand if we were not.

"No, no"—a grim smile compressed her fine lips—"we're not going to spend five hundred years looking for a needle in a haystack. I'll trust to psychology before I trust to chance. We have the man who understands the map, and



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while it will take time, he'll talk in the end."

She started to turn away, then stopped. "What," she asked, "about the building itself? Have you drawn any conclusions from its design?"

He nodded. "Of the type used in the galaxy about fifteen thousand years ago."

"Any improvements, changes?"

"None that I can see. One observer, who does all the work. Simple, primitive."

She stood thoughtful, shaking her head as if trying to clear away a mist.

"It seems strange. Surely after fifteen thousand years they could have added something. Colonies are usually static, but not that static."

She was examining routine reports three hours later when her astro clanged twice, softly. Two messages—

The first was from Psychology House, a single question: "Have we permission to break the prisoner's mind?"

"No!" said Grand Captain Laurr.

The second message made her glance across at the orbit board. The board was aglitter with orbit symbols. That wretched old man, disobeying her injunction NOT to prepare any orbits.

Smiling twistedly, she walked over and studied the shining things, and finally sent an order to Central Engines. She watched as her great ship plunged into night.

After all, she thought, there was such a thing as playing two games at the same time. Counterpoint was older in human relations than it was in music.

The first day she stared down at the outer planet of a blue-white sun. It floated in the darkness below the ship, an airless mass of rock and metal, drab and terrible as any meteorite, a world of primeval canyons and mountains untouched by the leavening breath of life.

Spy rays showed only rock, endless rock, not a sign of movement or of past movement.

There were three other planets, one of them a warm, green world where winds sighed through virgin forests and animals swarmed on the plains.

Not a house showed, nor the erect form of a human being.

Grimly, the woman said into the intership communicator: "Exactly how far can our spy rays penetrate into the ground?"

"A hundred feet."

"Are there any metals which can simulate a hundred feet of earth?"

"Several, noble lady."

Dissatisfied, she broke the connection. There was no call that day from Psychology House.

The second day, a giant red sun swam into her impatient ken. Ninety-four planets swung in their great orbits around their massive parent. Two were habitable, but again there was the profusion of wilderness and of animals usually found only on planets untouched by the hand and metal of civilization.

The chief zoological officer reported the fact in his precise voice: "The percentage of animals parallels the mean for worlds not inhabited by intelligent beings."

The woman snapped: "Has it occurred to you that there may have been a deliberate policy to keep animal life abundant, and laws preventing the tilling of the soil even for pleasure?"

She did not expect, nor did she receive, an answer. And once more there was not a word from Lieutenant Neslor, the chief phychologist.

The third sun was farther away. She had the speed stepped up to twenty light days a minute—and received a shocking reminder as the ship bludgeoned into a small storm. It must have been small because the shuddering of metal had barely begun when it ended.

"There has been some talk," she said afterward to the thirty captains assembled in the captains' pool, "that we return to the galaxy and ask for an expedition that will uncover these hidden rascals.

"One of the more whining of the reports that have come to my ears suggests that, after all, we were on our way home when we made our discovery, and that our ten years in the Cloud have earned us a rest."

Her gray eyes flashed; her voice grew icy: "You may be sure that those who sponsor such defeatism are not the ones who would have to make the personal report of failure to his majesty's government. Therefore, let me assure the faint hearts and the homesick that we shall remain another ten years if it should prove necessary. Tell the officers and crew to act accordingly. That is all."

Back in the main bridge, she saw that there was still no call from Psychology House. There was a hot remnant of anger and impatience in her, as she dialed the number. But she controlled herself as the distinguished face of Lieutenant Neslor appeared on the plate. She said then:

"What is happening, lieutenant? I am anxiously waiting for further information from the prisoner."

The woman psychologist shook her head. "Nothing to report."

"Nothing!" Her amazement was harsh in her voice.

"I have asked twice," was the answer, "for permission to break his mind. You must have known that I would not lightly suggest such a drastic step."

"Oh!" She had known, but the disapproval of the people at home, the necessity for accounting for any amoral action against individuals, had made refusal an automatic action. Now— Before she could speak, the psychologist went on:

"I have made some attempts to condition him in his sleep, stressing the uselessness of resisting Earth when eventual discovery is sure. But that has only convinced him that his earlier revelations were of no benefit to us."

The leader found her voice: "Do you really mean, lieutenant, that you have no plan other than violence? Nothing?"

In the astroplate, the image head made a negative movement. The phychologist said simply:

"An 800 I. Q. resistance in a 167 I. Q. brain is something new in my experience."

The woman felt a great wonder. "I can't understand it," she complained. "I have a feeling we've missed some vital clue. Just like that we run into a weather station in a system of fifty million suns, a station in which there is a human being who, contrary to all the laws of self-preservation, immediately

kills himself to prevent himself from falling into our hands.

"The weather station itself is an old model galactic affair, which shows no improvements after fifteen thousand years; and yet the vastness of the time elapsed, the caliber of the brains involved suggest that all the obvious changes should have been made.

"And the man's name, Watcher, is so typical of the ancient pre-spaceship method of calling names on Earth according to the trade. It is possible that even the sun, where he is watching, is a service heritage of his family. There's something—depressing—here somewhere that—"

She broke off, frowning: "What is your plan?" After a minute, she nodded. "I see . . . very well, bring him to one of the bedrooms in the main bridge. And forget that part about making up one of our strong-arm girls to look like me. I'll do everything that's necessary. Tomorrow. Fine."

Coldly she sat watching the prisoner's image in the plate. The man, Watcher, lay in bed, an almost motionless figure, eyes closed, but his face curiously tense. He looked, she thought, like someone discovering that for the first time in four days, the invisible force lines that had bound him had been withdrawn.

Beside her, the woman psychologist hissed: "He's still suspicious, and will probably remain so until you partially ease his mind. His general reactions will become more and more concentrated. Every minute that passes will increase his conviction that he will have only one chance to destroy the ship, and that he must be decisively ruthless regardless of risk.

"I have been conditioning him the past ten hours to resistance to us in a very subtle fashion. You will see in a moment . . . ah-h!"

Watcher was sitting up in bed. He poked a leg from under the sheets, then slid forward, and onto his feet. It was an oddly powerful movement.

He stood for a moment, a tall figure in gray pajamas. He had evidently been planning his first actions because, after a swift look at the door, he walked over to a set of drawers built into one wall, tugged at them tentatively, and then jerked them open with an effortless strength, snapping their locks one by one.

Her own gasp was only an echo of the gasp of Lieutenant Neslor.

"Good heavens!" the psychologist said finally. "Don't ask me to explain how he's breaking those metal locks. Strength must be a by-product of his Dellian training. Noble lady—"

Her tone was anxious; and the grand captain looked at her. "Yes?"

"Do you think, under the circumstances, you should play such a personal role in his subjection? His strength is obviously such that he can break the body of anyone aboard—"

She was cut off by an imperious gesture. "I cannot," said the Right Honorable Gloria Cecily, "risk some fool making a mistake. I'll take an antipain pill. Tell me when it is time to go in."

Watcher felt cold, tense, as he entered the instrument room of the main bridge. He had found his clothes in some locked drawers. He hadn't known they were there, but the drawers aroused his curiosity. He made the preliminary Dellian extra energy movements; and the locks snapped before his super strength.

Pausing on the threshold, he flicked his gaze through the great domed room. And after a moment his terrible fear that he and his kind were lost, suffered another transfusion of hope. He was actually free.

These people couldn't have the faintest suspicion of the truth. The great genius, Joseph M. Dell, must be a forgotten man on Earth. Their release of him must have behind it some plan of course but—

"Death," he thought ferociously, "death to them all, as they had once inflicted death, and would again."

He was examining the bank on bank of control boards when, out of the corner of his eyes, he saw the woman step from the nearby wall.

He looked up; he thought with a savage joy: The leader! They'd have guns protecting her, naturally, but they wouldn't know that all these days he had been frantically wondering how he could force the use of guns.

Surely to space, they *couldn't* be prepared to gather up his component elements again. Their very act of freeing him had showed psychology intentions.

Before he could speak, the woman said, smilingly: "I really shouldn't let you examine those controls. But we have decided on a different tactic with you. Freedom of the ship, an opportunity to meet the crew. We want to convince you . . . convince you—"

Something of the bleakness and implacableness of him must have touched her. She faltered, shook herself in transparent self-annoyance, then smiled more firmly, and went on in a persuasive tone:

"We want you to realize that we're not ogres. We want to end your alarm that we mean harm to your people. You must know, now we have found you exist, that discovery is only a matter of time.

"Earth is not cruel, or dominating, at least not any more. The barest minimum of allegiance is demanded, and that only to the idea of a common unity, the indivisibility of space. It is required, too, that criminal laws be uniform, and that a high minimum wage for workers be maintained. In addition, wars of any kind are absolutely forbidden.

"Except for that, every planet or group of planets, can have its own form of government, trade with whom they please, live their own life. Surely, there is nothing terrible enough in all this to justify the curious attempt at suicide you made when we discovered the weather station."

He would, he thought, listening to her, break her head first. The best method would be to grab her by the feet, and

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smash her against the metal wall or floor. Bone would crush easily and the act would serve two vital purposes:

It would be a terrible and salutary warning to the other officers of the ship. And it would precipitate upon him the death fire of her guards.

He took a step toward her. And began the faintly visible muscle and nerve movements so necessary to pumping the Dellian body to a pitch of superhuman capability. The woman was saying:

"You stated before that your people have inhabited fifty suns in this space. Why only fifty? In twelve thousand or more years, a population of twelve thousand billion would not be beyond possibility."

He took another step. And another. Then knew that he must speak if he hoped to keep her unsuspicious for those vital seconds while he inched closer, closer. He said:

"About two thirds of our marriages are childless. It has been very unfortunate, but you see there are two types of us, and when intermarriage occurs as it does without hindrance—"

Almost he was near enough; he heard her say: "You mean, a mutation has taken place; and the two don't mix?"

He didn't have to answer that. He was ten feet from her; and like a tiger he launched himself across the intervening gap.

The first energy beam ripped through his body too low down to be fatal, but it brought a hot scalding nausea and a dreadful heaviness. He heard the grand captain scream:

"Lieutenant Neslor, what are you doing?"

He had her then. His fingers were grabbing hard at her fending arm, when the second blow struck him high in the ribs and brought the blood frothing into his mouth. In spite of all his will, he felt his hands slipping from the woman. Oh, space, how he would have liked to take her into the realm of death with him.

Once again, the woman screamed: "Lieutenant Neslor, are you mad? *Cease fire!*"

Just before the third beam burned at him with its indescribable violence, he thought with a final and tremendous sardonicism: "She still didn't suspect. But somebody did; somebody who at this ultimate moment had guessed the truth."

"Too late," he thought, "too late, you fools! Go ahead and hunt. They've had warning, time to conceal themselves even more thoroughly. And the Fifty Suns are scattered, scattered among a million stars, among—"

Death caught his thought.

The woman picked herself off the floor, and stood dizzily striving to draw her roughly handled senses back into her brain. She was vaguely aware of Lieutenant Neslor coming through a transmitter, pausing at the dead body of Gisser Watcher and rushing toward her.

"Are you all right, my dear? It was so hard firing through an astroplate that—"

"You mad woman!" The grand captain caught her breath. "Do you realize that a body can't be reconstituted once vital organs have been destroyed. Dissolution or re-solution cannot be piecemeal. We'll have to go home without—"

She stopped. She saw that the psychologist was staring at her. Lieutenant Neslor said:

"His intention to attack was unmistakable and it was too soon according to my graphs. All the way through, he's never fitted anything in human psychology.

"At the very last possible moment I remembered Joseph Dell and the massacre of the Dellian supermen fifteen thousand years ago. Fantastic to think that some of them escaped and established a civilization in this remote part of space.

"Do you see now: Dellian—Joseph M. Dell—the inventor of the Dellian perfect robot."

THE END.

Probability Zero

Calling All Liars!

DER FUEHRER'S BASE

By George O. Smith

He introduced himself as Jean Le Croix, and said that he had been in Haiti for years. That's possible. There are a lot of Jean Le Croix-es running around loose. I didn't mind. He was amusing, and to find an amusing citizen on a club car these days is a real treat. It was on the third Martini that he told me why he was on his way to Washington.

"I'm going to get deferred," he said. "I'm the man responsible for making Der Fuehrer lose his face."

"Fine," I said. This should be good, I thought. Any party who thought that he was responsible for Schickelgruber's discomfort was likely to be interesting, even though he turned out to be the Napoleon type, strictly from the loony locker. "Tell me, Le Croix, how were you able to accomplish that?"

"The people of Haiti," he said proudly, "are all well acquainted with Voodoo magic."

"Wham!" said I. "Voodoo, hey?"

"Precisely. As a junior physicist, I have studied this with a scientific bend. I am chief engineer for the plastic molding company who makes those little pincushions—you know the ones—that depict Adolph in the Position. You impale his nether end with pins. That was my idea."

"But the Voodoo?"

"Voodoo requires a number of things. First, there is the psychodynamics."

"The who-co-dy-what-ics?" I stammered. He'll be deferred, I thought. They don't want cuckoos in the army.

"Psychodynamics. A number of people all with a single thought, can force that thought into action. That is it, simply and baldly, stripping it of its gingerbread. Actually, it is more complicated than that, but the description carries the meat of the idea.

"At any rate, in Africa, there are a lot of people who believe in Voodoo. That satisfied the psychodynamics. The next thing was to get something of the person. I figure that a man's breath

might carry enough of him to do some good. Since Adolph has been breathing too long, I doubt that there is a single cubic foot of air on the planet that does not have a molecule of air or two that have been in his lungs.

"Now plastics are largely carbon, hydrogen, nitrogen, oxygen and so on. So in compounding plastics, I calculate that we have entrapped quite a few of Hitler's erstwhile breath of life.

"So we made the images, bent in the Position, and people who like to save pins and stuff insert the pointed instrument into the cushion end. That's the end opposite to Der Fuehrer's face."

"All right," I said, calling for another Martini. "How do you make that into being responsible for his downfall?"

"Think of millions of people pushing pins into Adolph's plump derrier. And then think, friend, what did Hitler lose in Russia, and again in Africa?"

I've never seen Jean Le Croix since. But, brother, I've got a Hitler pincushion on my desk—and I'm using fishhooks for bait! Let's all get in and pinch!

YOU SAID IT!

By Charles Ben Davis

It was a very amateurishly done sign:

CLICHE CLINIC

Professor Erasmus Turp, Sole Prop.

"No matter what your trouble is,
A Turp cliche will do the bix."

And it was being very amateurishly hung. As the final nail derisively bent under the hammer, the rickety ladder wabbled against the old brownstone building, and the short, potty figure wavered wildly.

"Here," I said, dropping my case and steadying the ladder. He climbed down, perspiring.

"Bless you, young man! Very fortuitous!" he exclaimed, wringing my hand feverishly. "Only wish I could repay your kindness. Oh, my yes! Finances wholly expended on equipment. Yes! Have any troubles?" he finished hopefully.

I groaned, lifted a foot. "These pups are killing me," I said. They'd been crushed years before, and the bones kept saying nix to a complete healing job. "And me a house-to-houser!"

He grabbed me delightedly, rushed me into a laboratory. "Your trouble's over, my friend!" he cried happily, bounding into a chair before a confusing control panel and plopping a wire-tentacled helmet on his head. "You need a cliché!"

"I need an aspirin," I said. "What's the score, Popsy?"

He paused abruptly, then tumbled his words out. "Terribly sorry. Should have explained. Yes. I'm Turp. Erasmus Turp. What is speech?"

I floundered. "Why, ah, oral communication—I guess."

"Quite so! Yes. Normal reply! But speech is more. Representation! Now, I say to you, 'Train went by.' In your mind, *you* see a train passing. Phrase *represents* train. Makes it a concrete fact to you. Right?"

"Your nickel," I said. "Talk on."

"Right! Speech represents realities! Things! Actions! And more. Represents *un*realities! Constant repetition of speech references makes unrealities become realities. All clear?"

"No," I told him. "I got off as the train went by."

"Have made great study of absurd clichés. Developed electroscramboic Cliché Vitalizer. I concentrate mental impulses of all past usage of any cliché. Create positive charge of galvanic thrumdoodits. Ionizes electrical thought impulses under strong bombardment. Makes cliché actual fact. Observe!"

Twirling knobs and dials, he fanned a blue cone of light over me, flicked a switch, removed his helmet. "Walk!"

I took an obedient step—and never

felt better. There was no tearing pain as my feet came down with each step. I stared down. Both feet were incased in a billowy white mist.

"Silly phrase!" said Professor Turp. "Used a million times. Now absolute fact! You're walking on clouds."

"Well, I'm a monkey's uncle!"

He grinned suddenly, replaced his helmet. "Like to be?"

"No, thanks!" I refused. "I'll stop with the clouds."

The professor fingered the dials and a gigantic *crrrash!* rocked into the room.

"Night just fell," said Turp.

"Yeah, and *you* fell down on your rent; so clear this junk out by tomorrow!" bellowed the huge, glowering figure that hulked in the doorway.

"Rent. Oh, my, yes!" Turp acknowledged. "Regrettable. Very! Account depleted. Must take steps. Yes!"

Knobs spun; the blue light swirled out; switches clicked.

The threatening visitor snapped backward sharply, sank stubbornly to the floor, then scurried out on hands and knees with a mournful howl.

"Too bad. Yes!" Turp observed. "Must make amends later."

"What the holy—" I started.

"Simple. Very!" the professor explained, rising from his apparatus. "Three clichés. A thought struck him. I stared him down. Yes! Now leading a dog's life. Come!"

"Where to?"

"Let's have a beer. On you," he suggested.

I eyed his portly form. "If you have a beer on me," I said, "make sure that gadget's off!"

FINANCE

By David Charles

"If time travel is possible, Jim, some time in the future a time machine will be built. And, if so, why is there no record of a visitor from time, or anyone who bore claims to being one? He would not find it difficult to bring convincing proof."

Baily smiled into the fire. "Don, you should look at all the facts. Until the past fifty or seventy-five years such a claim would appear so fantastic that the most irrefutable proof would be laughed at. If the traveler were too persistent he may have been accused of witchcraft. Why, at Salem— Just how would you explain the situation to a man who had never seen an electric light? Whose knowledge of science is that of the pre-Victorian 'man-of-the street.'"

"But something could have been done. Look at the events of today. Why didn't one of your hypothetical travelers warn the navy of the Pearl Harbor attack? Why wasn't Hitler disposed of as a child? Why—"

"The best-laid plans of mice and men, Don. What has happened is over; the past may not be changed. All a traveler may do is add to the confusion. The ultimate result is the same. Do you remember the time I borrowed a thousand dollars from you?"

"How could I forget it? You gave me a note for a thousand and fifty due in six months; after six weeks you hire me as your business manager, insist on giving me two thousand for the note, have a nervous breakdown, and I find that you are the richest man in the world. The Nizam of Hyderbad may have enough jewels to half bury the Taj Mahal, but you could buy the whole pile, Taj and all, sell at a fifty-percent loss, then have enough left to buy Hyderbad. And the things you do, Jim! You buy a fleet of bombers and send them over Tokyo with a delivery of hardware that all but blasts the city off the map. Do you know what a battleship costs? You should—you are financing the construction of two. And I find that you have still more assets. I've been so busy digging your stocks and bonds out of safe-deposit boxes that I've become allergic to banks. Jim, I don't think that there is a company in the United States

you haven't an interest in. How did you do it?"

"I built a time machine. Just like that. It was so simple that it surprised me. I first started work on it as a hobby; something to do in my spare time. One day a letter came telling me I was on the track of a great discovery. In the letter were plans and detailed information on the time drive, also fifty thousand dollars cash. That was all; no signature. From time to time I received more aid from my unknown patron. Then about two years ago the ship was completed.

"I spent a year exploring the past. The machine would return me to my starting point, but never beyond into the future. Then I began to run low on cash. No more was forthcoming via the mail, so I worked out a plan. I went back to the summer of 1929 and got a job in a brokerage office in New York. All that I made was invested through the aid of the *Wall Street Journal* as per the week ahead. Of course, it was no trouble to accumulate a small fortune. Then one Thursday afternoon in November I sold all my holdings. The next day the market fell and I congratulated myself on a bit of clever manipulating. It was then that I realized my benefactor was myself. I went forward to the time wherein I was working on the time machine and mailed the information with the money. That took all but a few hundred dollars of my finances. Then, Don, I returned to 1941 and borrowed the thousand from you, which I took back to July, 1929, and began all over again. After the crash, I once more went back and started to pyramid my profits. I was money mad; I went back time and time again, built up more and more. I met myself several times and planned, worked out systems. Then one November 27th, as I stood on the gallery of the stock exchange watching the market fall, the realization of what I had done struck me. With the vast buying power I had built I had driven the market up. By selling out I had collapsed it and started the panic. I tried to rally the market by buying again, but the millions that I threw in were absorbed like water thrown on dry sand. The result was my accumulation of the vast holdings I now have. Some others bought heavily, but you know what happened—the market never recovered.

"I returned to the end of '41 and had my breakdown. So you see, all I did was add to the confusion. Now I am repaying the people in the only way I can for what I have done. Yes, Don, the depression was caused by one man, myself."

Y = SIN X

By Harold Wooster

Section from transcript—OSRD conference on project 17KS1406:

Chair: Dr. Manning, I think we'd all appreciate your explanation of the failure of your project in its final tests.

Manning: I think I can make it a little clearer if I review the development of the project—is that all right with you?

Chair: Certainly—make the explanation in your own way.

Manning: Well, as you know, the homing pigeon still plays an important part in the communication system of a modern army—a part that would be still more important if the mobility of modern warfare did not make it difficult to train pigeons to fly to new locations each day. You will recall the publicity given a few years ago in the popular press to the findings that homing pigeons, released in the vicinity of a powerful radio station, would circle around it, aimlessly, for days.

We repeated those preliminary experiments. The results definitely indicated that the pigeon could perceive radio waves—and that they affected the same part of the nervous system that governed the homing sense. Therefore, it seemed possible that pigeons could be trained to "home" to radio bea-

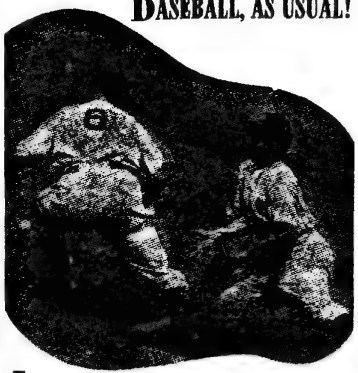
cons. The advantages of this are readily apparent—each unit could have its own radio beacon, and pigeons could be used for communication between rapidly moving units, especially in cases where the enemy was "jamming" transmitted messages.

The project was set up. Preliminary research showed that certain strains of pigeons were positively radiotrophic. The genetics department then proceeded to bred for intensification of that factor. You have their report in front of you—I can summarize by saying that they kept pigeons and eggs in the cyclotron room, unshielded, for varying intervals of time—the precise period of exposure being determined from the regression equation they developed giving the rate of development of highly radiotrophic mutations plotted against unfavorable mutations. These pigeons were then transferred to our Rocky Mountains laboratory.

There we had been working on the electronic side. The Mark III portable signal generator was developed—weighing a little over five pounds and sending out a tight beam in the ultra-high-frequency spectrum, with an effective range of fifty miles. The ornitho-psychologists then proceeded with the training of the pigeons—using various methods to develop a strong conditioned reflex to this particular frequency. The pigeons were found to be sensitive to fairly small changes in the frequency of the beacons, so that a number of transmitters could be used in a small area, each with its characteristic signal. Our field tests proceeded to the point where we felt that the project was ready to turn over to the Signal Corps for testing. I believe you have their report on your desk.

Chair: Report from Adirondack testing ground—effective range 48.7 miles, 97.5 percent of pigeons returned; Mojave testing ground—51.1 miles, 99 percent; Maryland, New York, and California testing grounds—impossible to test effective range, no pigeons re-

BASEBALL, AS USUAL!



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turned to beacon. What is your explanation of these three complete failures, Dr. Manning?

Manning: Well, I'm afraid we completely overlooked one factor, which is going to make it impossible to use these beacons in inhabited areas—and that is sixty-cycle pick-up.

Chair: I thought the signal generator—at least the Mark III, worked from batteries—and, anyhow, ac interference shouldn't be too difficult to filter out.

Manning: That isn't where the trouble lies. In the first place, our Rocky Mountains lab was deliberately set up in an isolated area, and when the tests were repeated in other isolated areas, they worked perfectly. But, we've developed a strain of pigeons that is highly sensitive to electromagnetic waves. With the ultrahigh frequencies we were using, the pigeons apparently "heard" the signals as a single tone—you will recall that D'Arsonval showed that nerves could only respond to currents up to five thousand cycles. Every time these highly sensitive pigeons cross an alternating current line they start flying in a sixty-cycle sine curve—and at sixty cycles a second they break their necks.

UNIVERSAL SOLVENT

By Clayton James MacBeth

My train wasn't due for half an hour, so I dropped into the friendly-looking little saloon across the street from the station. I had seated myself at the bar and ordered my drink before I really looked around. It was a small dimly lighted place with a row of booths along one side, and the inevitable juke box in the corner. My casual gaze came to rest on a lonesome figure in one of the stalls. He was the only other customer besides myself.

He was small, almost elfish, but dressed in well-cut clothes. He had a pinched face, now sagging in the depths of sorrow and a high forehead that slowly disappeared into a bit of thin gray hair.

The numerous empty glasses before him suggested that he was trying to drown some deep despair in an ocean of liquor.

I awoke from my thoughts with a jolt as he raised a thin hand and beckoned to me.

Turning, I paid the jovial-faced bartender, and with some misgivings joined the small man in the booth.

"You wanted me?" I inquired.

He gazed at me a moment through watery blue eyes before answering.

"Yes—I suppose I did," he said sadly. "I must speak with someone."

"You in trouble?" I suggested.

He looked up quickly. "Oh, no!" he protested. "No, not trouble. At least not the kind you're thinking of."

Looking sadly up at me, he sighed deeply and poured out another glass of liquor which he began to sip slowly.

From long experience with intoxicated people, I knew that he was leading up to one thing. In his sodden state he had to tell someone his sorrows, and I was the victim. A glance at my wrist watch showed me that I still had fifteen minutes before my train would arrive, so I settled myself more comfortably and reluctantly asked him to tell me his story.

His watery eyes brightened a bit at my words, and he hastily emptied the glass and reached for the bottle again.

"What has befallen me shouldn't befall a canine," he sighed. "I am a chemist, and all my life I have been searching for the universal solvent."

I raised my eyebrows, and my inebriated companion hastened to explain.

"The universal solvent is a hypothetical liquid which can dissolve anything and everything with which it comes into contact. Well, on this particular morning I was engaged in one of my usual experiments when the phone in the outer room suddenly rang. I an-

swered it, and it turned out to be nothing but a wrong number. While returning to the laboratory, I heard a terrible crash.

"I discovered that Alexander the Great, my cat, in the course of his rodentary pursuits had climbed upon one of the shelves and knocked over a considerable quantity of chemicals into my embryo experiment. Of course, I was furious, and just as I was about to pour the mess down the sewer, I noticed that a peculiar green glow seemed to be emanating from it. My scientific curiosity was aroused. Taking a piece of litmus paper, I dipped the end in the solution to determine whether it had acidic or alkaline properties. To my profound astonishment, the paper was completely dissolved.

"An idea was formulating in my brain, and after a few more simple tests, I realized the truth. Through an incredible accident the dream of my life had been achieved. I had before me the universal solvent.

"No matter what I put into the greedy solution, plastic or metal, it was completely dissolved. Of course, some materials were destroyed more quickly than others.

"I was just congratulating myself, when I was faced by an unusual problem. What sort of a container would hold the solvent until I had time to analyze its ingredients? The small Pyrex tub which now inclosed it had almost been eaten through.

"After many trials, I found that a Pyrex dish coated with wax would hold it for about an hour and a half. This would give me sufficient time to go down to the Science Institute, borrow their Donalson Analyzer, and return before a new wax-Pyrex vessel was needed.

"I made it to the institute and back in an hour, leaving me thirty minutes to spare. You can imagine my horror upon entering the laboratory to find that the solvent was gone. The container had not been dissolved, no one could have stolen it, and yet it had completely disappeared. My grief was almost overpowering.

"I didn't have a chance to use the Donalson Analyzer, so, of course, I didn't know the ingredients, and now I'll never be able to duplicate it again."

My waspish companion gave vent to another of his sighs and drained the last of the bottle of liquor.

I waited eagerly for him to continue, but he just sat there, toying with the empty glass.

"Damn it, man!" I exploded. "Surely you know where it went. Didn't you ever find it? What happened to it?"

He gazed up at me innocently.

"Of course I know. Don't you?"

I shook my head violently.

"It's very obvious," he stated calmly. "It was a solvent that would dissolve anything, and so, finally, it just dissolved itself."

AND WATCH THE FOUNTAINS

By Ray Bradbury

Morgan and Thompson hated each other's guts. They competed with each other, stole business from one another. Morgan, say, invented a can opener; then Thompson perfected a new hexagonal can that made the can opener obsolete. On the other hand, Thompson invented a rocket powder; and Morgan toddled out with his antigravity ship that needed little propulsion except hot air—for which an ample supply of lecturing scientists were already installed. So the competition waxed and waned.

One morning Dr. Morgan, the younger of the two, telephoned Thompson in high spirits. "Hello, hello," he cried. "Meet me at the Rocket Café at noon. I have something to tell you. Yes, sir!"

Old Doc Thompson seemed in rare spirits, too. He accepted. They met.

"My dear Thompson!"

"My dear Morgan!" They slapped each other on the back, beaming.

"You seem happy today, Morgan?"

"Very, very happy. I've just completed an incredible invention."

Thompson smiled. "Ah? How nice. I hate to take the edge off your work, young man, but I have ALSO just completed an apparatus."

"It can't be half as good as mine," said Morgan, irritated.

"Twice as good," said Thompson, eating his salad voraciously.

Morgan eyed the old man wickedly. "If you only knew. I really shouldn't tell you this, but it is too good to keep, you old fool! I have built a *time machine!*"

Thompson choked on his salad. His face reddened. After a few moments of swallowing, during which Morgan laughed happily, Thompson glared at his opponent. "That's nothing," he cried, "you should know what *I* am at work on!"

"What is it?" asked Morgan, his eyes hardening.

Thompson shrugged. "It's a secret. Tell you later on, my son."

"Tonight," announced Morgan, "I shall go into the future!"

Thompson looked bored. "I will be ready to experiment with my invention in a few days. It's really very good."

Morgan pounded the table angrily. "Bah to *your* invention! You'll never have a chance to profit by it!"

Thompson lifted his white brows. "What do you mean by that?"

Morgan smiled cockily. "I am going into the future a couple of days and stab you in the back, you foul old buzzard!"

Thompson said, "Are you serious?"

"Yes, I am. You've irritated me for twenty years. Now I have decided to kill you."

"I shall accept my fate," said Thompson, dreamily, "with quiet philosophy."

Morgan showed his disappointment. "Aren't you worried? Aren't you going to have hysterics and plead with me on your knees?"

Thompson put a piece of meat in his mouth and chewed it, musingly, "I just had my pants pressed."

"Just for that," cried Morgan, "I shall stab you five times and watch the fountains!" With that, he raged out of the café, swearing.

Thompson sat there, scowling introspectively, chewing the thoughts of a tired old man. "That young fool," he said.

The sun came up and went down four times. Thompson assembled a mass of machinery and did things to it, pulled it apart again, and left it scattered around his laboratory where Morgan would see it.

Very late on Wednesday evening, Thompson felt someone breathing down his neck. That, and a faint odor of ozone and lilac told him that Morgan had arrived just behind him in his time machine.

"Oh, there you are!" said Thompson, turning around, hands empty.

"And there YOU are!" cried Morgan, plunging a knife into Thompson five times. Thompson collapsed, laughing, while his blood crimsoned the floor. "You're dying!" said Morgan. "Why do you laugh?"

Thompson pointed with weak fingers at the apparatus scattered about his laboratory. "You clever, clever boy. You thought you had a perfect crime, did you not?" he wheezed.

Morgan sneered. "Quite perfect!"

Thompson gasped with pain. "But *I* shall have the last laugh. You see . . . my invention . . . *it* was a time machine, too!"

"What!"

"Yes, and when you told me you'd kill me, *I* took a trip into the future . . . and you know what I did? Ha! I strangled you with copper wire and dropped your carcass into a vat of high-powered acid! Isn't that funny? Isn't that rich? Ha, ha!"

Morgan paled, grabbed the old man

by the shoulders. "Don't die yet! Hold on! When . . . when in the future did you do this? WHEN?"

Thompson gargled faintly. "You want to know what day in the future I killed you, so you can be out of town that day? Oh, no. I won't tell. It . . . it may be one day, it may be one month, it may be one year, it may be ten years. But I'll show up and kill you when you won't be expecting it! Ha, ha!"

"Thompson! Thompson!" screamed Morgan, shaking the old man. But the shaking only hastened Thompson's death. He choked and passed away, still laughing.

And Morgan went back home in his time machine, wondering, watching, waiting. And in the following months he kept jerking, getting more and more nervous. He glanced over his shoulder at the slightest noise. His appetite, usually prodigious, vanished. He wept on his pillow all night. He smoked cigarettes incessantly. He tried reading long books, but couldn't get interested in them. He couldn't sleep. He lay awake until the dawn watching the shifting shadows in his room.

And this nervous, twitching, watching, wondering, waiting went on for forty long years.

Thompson never showed up.

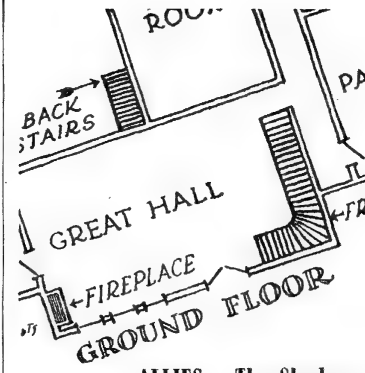
And Morgan, lying wrinkled on his deathbed, realized with horrified, angered, stifled irony JUST HOW BIG A LIAR THOMPSON WAS!!!

Brass Tacks

Gailbraith's creator is busy creating havoc among the sons of the Sun—with special training in PT boat operation.

Dear Mr. Campbell:

As it doesn't look as though I shall be able to spare the time to call in person with my list of growls, I guess I'd better put them down in writing.

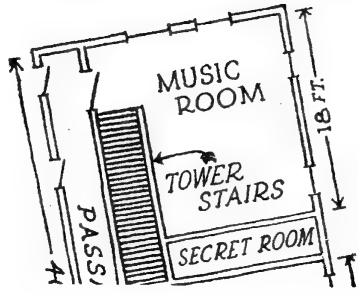


ALLIES: The Shadow and the Great Dunninger!

The greatest "ghost breaker" in the world, Joseph Dunninger, gets together with The Shadow to expose a house of mystery. Dunninger offers $25,000 to anyone who can prove the existence of a "ghost" that he cannot duplicate . . . and he meets a challenge that makes him bring forth his most ingenious devices!

Don't miss the original, different Shadow novel, HOUSE OF GHOSTS, featuring Dunninger, in the September issue of

The Shadow AT ALL NEWSSTANDS



The main growl is one you'll be used to by this time. I growled when you changed the size the first time, and I growl again now you're changing it back. Of course, being used to wartime economics, we foresaw that the time would come when paper shortage would force the change upon you. It seemed indiscreet of you to increase the size of Astounding at the very moment when the U. S. A. joined the belligerents.

In England we have seen our magazines and newspapers grow smaller and smaller, and the quality of the paper in our books grow worse and worse. The only publications for which there appears to be ample paper are those official forms which have to be filled in, at the very least, in triplicate. *Mais que voulez vous? C'est la guerre.*

But let us now discuss the fare which you laid before us in the first four issues of this year of grace.

"The Weapon Makers" somehow missed fire.

"Clash by Night," was GOOD.

Lewis Padgett's little fantasies are very worthy of publication.

"Swimming Lesson" was good. The wife puts it first, but I prefer "Clash by Night."

It is a great pity that we shall have to wait for Isaac Asimov to finish his series, and for Stewart to carry on with the Seetee Saga. Talking of series and sagas and so on, what finally happened to Comrade Gailbraith?

And now we're going all sociological again, much as I liked "Clash by Night," I just couldn't fathom the economic set-up.

Man, as you say, is an incurably illogical animal, but the sociology of Venus seemed frightfully weird to me. One could understand something in the nature of the society of the Keeps with bands of the disgruntled setting up shop as bandits and/or pirates, and with bands of mercenaries maintained by the Keeps in self-defense. But this token fighting, these phony wars, between the Keeps themselves was hard to understand. It just didn't tally.

Anyhow, it was a good story, and I liked it.

And now I will close.

But, please, no more changes. Like most seamen I am intensely conservative, and any deviation from routine arouses my bitter resentment.

And can't you persuade Don A. Stuart to give us another story or so?—A. Chandler, 62 Grove Road, Beccles, Suffolk, England.

Don Channing mentions a millisecond as the deviation in position as observed from Venus Equilateral. The ship didn't—couldn't—turn at right angles, but a vector of considerable magnitude at right angles was attained.

Dear Mr. Campbell:

George O. Smith's "Calling the Empress" is a doggone good yarn, and a worthy sequel to its forerunner. But there is one item in it that bothers me and I wish someone handier than I with a slipstick will explain how it was done. When the *Empress of Kolain* was contacted, you may remember, she was told to acknowledge by turning at right angles and holding that course for ten minutes. In view of the fact that she was going some hundreds of miles per second as the result of a twelve-hour build-up of the steady application of one *g*, and since there was no air about to brake her forward component, how in thunder did she manage it? The best I can make of it is an almost imperceptible swerving to the side—measurable in seconds of arc. Astragators to the rescue, please!

While I am writing let me express gratitude to Willy Ley for his part in debunking the Sargasso Sea. It resembles ditch water in one respect, being proverbially dull—barring gorgeous sunsets—when viewed as water, in the mass, but intensely interesting when studied drop by drop under the microscope. I think I must have crossed it half a

dozen times before I ever knew I had, one of the last being along what was approximately the course of the *Santa Maria*—Cadiz to San Salvador. There are patches of seaweed there, to be sure, but so are there in the Gulf Stream along the shores of Florida. Some may be an acre in extent, but there may also be miles of water between. If *vieron muchas yerbas* anywhere, they probably saw just as much the day they made their landfall, for I always think of seaweed and Crooked Island Passage in the same breath—and that is not a locality ordinarily regarded as being in the Sargasso Sea. As for flying fish, they are encountered all over the Gulf of Mexico and in the Caribbean as well. The same goes for Portuguese Men of War, which infest the mid-Pacific to quite the same degree. I am speaking now as a casual observer, not a scientist, but I have always thought and still think the Sargasso Sea an immensely overrated horror. Some weed patches might foul the screw of a small launch, but hardly a grown-up ship. They have been traversing it daily for many years. —Malcolm Jameson.

Getting back copies is harder than pulling teeth—but we do have all the '42 issues.

Dear J. W. C., Jr.:

I've read Astounding for several years, but made the grievous error of letting my copies go. I wasn't a dyed-in-the-wool stf. fan then. After the war got going good, I remembered "Final Blackout" and the race was on. I discovered Julius Unger and got a complete set of *Unknown* and a partial set of Astounding so far. Mostly Heinlein and Van Vogt. In the last three years—'40, '41 and '42 you have had many excellent stories, but three will always be with me and those three are: "Final Blackout"— Who cares whether it's science-fiction or history or what? Everyone who reads it is on the lieutenant's side when the U. S. comes to call.

Hubbard is no small potatoes as a writer. Next (these aren't in order of preference—they're all equal) is: "The Weapon Makers," a story which has as great a sweep as Smith's series, but doesn't get you bogged down by breathlessness caused from too much space—a form of spacesickness, I guess. Last is a short story and it needs no explanation—"Mimsy Were the Borogoves." Padgett may be a pen name, but he reads Carroll and loves him—even as I (and maybe you). Every adult ought to read Lewis Carroll's works once a year.

Over in another group are all of Bob Heinlein's historical patterns waiting for this war to end so Bob can finish the design. To my notion when you've got the stories I've named hid away in a corner of your library, brother, you've got something. Rogers for covers is A-1; Orbon inside; Isip—both of 'em—are good, but fit *Unknown* a little better; Cartier can't be beat for *Unknown*.

You edit the two best mags—bar none—in the science-fiction and fantasy fields, and I know a few things about removing the teeth suddenly for any guy who disagrees. I'd like to have the copies with MacDonald's other stories—namely: March '42, April '42, May '42, August '42. Drop me a post card as to their availability, if not too much trouble.—Karl K. Webber, D. D. S., 102 1-2 East North Avenue, Flora, Illinois.

Judgment Night

by C. L. Moore

Second of two parts. Concluding a great novel of an Empire—and more than merely an Empire, it happened—that depended finally on how two individuals, a man and a woman, worked out their personal problems. For the silent, unreliable whims of the demigods depended on them—

Illustrated by Williams

SYNOPSIS

The race that held the world called Ericon held the Galaxy. Through the ages, many races have conquered and ruled and fallen. Only the aloof, inhuman Ancients of Ericon live on forever. Those who sought knowledge from them were answered—but only the Ancients knew if the answer meant its hearer's doom. For they had their own strange code.

"Let them fight," the oracle said now to a questioner in their temple. "Your hour is almost here. Listen and watch, but keep your secret. They must have their chance in the final conflict that is almost upon them now—but you know how blind they are."

The empire was falling. The barbaric H'vani race moved inward, planet by planet, system by system, toward Ericon where the Lyonese Dynasty had its stronghold. The old emperor had grown weak, his daughter Juille believed. He favored arbitration. But Juille did not.

Like her father before her, she had been a warrior all her life. Her maid-servant Helia, of the conquered Andarean race, had reared her in the Amazonian cult of warfare. Now, on the brink of battle, Juille has gone to Cyrille, the little pleasure moon, with Helia and with her pet Ilar, the little catlike animal possessed only by royalty. Here she puts aside her sword and spends a brief idyl, incognito, with a flamboyant and charming young man she meets.

She senses a vague note of falsity and weakness in his character, but does not suspect that he is Egide, ruler of the H'vani, or that he has come to Cyrille with his aid, the red-bearded Jair, to kill her. And after a pleasant interval together, Egide says to Jair, "It's time to go. We were mistaken. This girl is not Juille of the Lyonese."

The planet Dunnar, surrendering to overwhelming H'vani forces, smuggles out an envoy with a new weapon. H'vani ships, pursuing him to Ericon, break the Ancients' taboo against air traffic above their sacred forests. The H'vani ships vanish in a flash of soundless destruction as the Ancients stretch forth an invisible hand.

The enigmatic Dunnarian envoy has brought a powerful weapon. With it a man may be killed, not only at any dis-

tance but at any time, once its sight is fixed on him. A picture of the victim's brain-pattern is snapped, and thereafter the weapon can seek him out anywhere, following like an invisible fuse to be ignited at will.

Juille does not trust the envoy, with his superhuman poise and his unwinking, reptilian eyes. Perhaps she senses that many varieties of treason are brewing beneath the surface of her court, but she cannot know that soon after the envoy's arrival, someone slips away from the palace to report to his friends in their hidden city how the Lyonese are blundering toward their fate. Here in the city, lighted by a garden of many-colored windows, the friends remember the promise of the Ancients and impatiently bide their time.

The emperor calls a truce with the H'vani to discuss peace. He sees chaos ahead. Egide and Jair come to Ericon at his invitation, and Juille, recognizing Egide, remembers their idyl with deep anger and humiliation. She loads her tiny palm gun and goes to the conference.

But her attempt to kill Egide fails. Captured by the two H'vani, she is taken by secret ways beneath the palace, built on the ruins of many former dynasties. Helia, Juille's servant, is the traitor. Loyal to her conquered race, she is scheming with the H'vani to overthrow the Lyonese. She leads Egide down to caverns where ancient lost weapons have been made ready for the H'vani by Helia's Andarean kinsmen. Their plot is to arm the enemies against one another until each is weakened to exhaustion, then step in to rule once more.

Bound, helpless, betrayed, Juille sees the ruined grandeur of forgotten dynasties beneath the city and knows her own race must join them in oblivion unless she can save herself. No one else can help her. Now that she has broken the truce, her father will be forced to fight against the unequal odds of the new weapons. Somehow, she must prevent Egide from escaping with them.

PART II.

"Here it is," the Andarean in the purple tunic said.

They all crowded forward to stare. And it was a sight worth staring at. The shadow hid most of the long room, shadows heavy as velvet curtains, as if their own age had thickened them into tangible things. But they could not wholly hide the weapons racked shining upon the walls, shining and defiant of dust and rust and the æons. Cobwebs had formed upon them like festoons, gathering dust until their own weight tore them. There were many layers of such cobwebs, woven and thickened and torn anew over these untarnished swords and pistols and nameless things. Wherever the velvety dust of the webs revealed them, they were brilliant in the light. Some other lost race had known and buried with itself the secret of such metal.

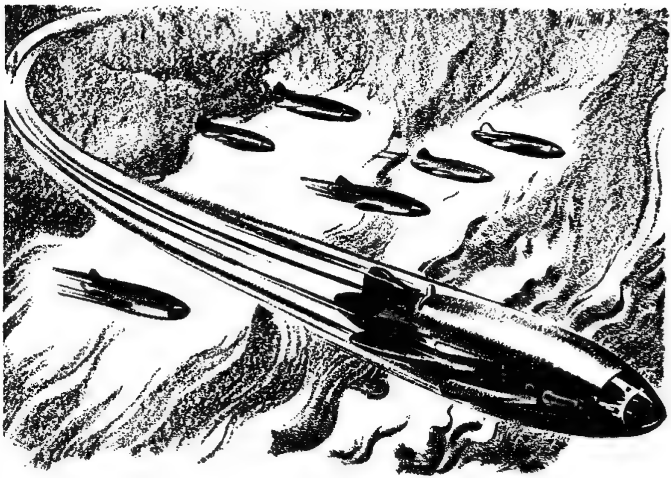
The Andarean dismissed that array with a gesture.

"Unimportant things there, on the walls. Only variations of weapons already in use. Out of all this arsenal there are only three important weapons that haven't been paralleled in later ages. We want to give you those three."

He padded silently forward through the dust, lifting his feet like a man who walks in snow, and took up from a clean-swept stand a little pistol not much bigger than the palm gun Juille had dropped in the council hall.

"This," he said, hefting its shining smallness on his hand, "discharges a miniature lightning bolt that feeds on metal. It leaps from armed man to armed man, or from girder to girder, feeding and growing as it goes, until the gap becomes too wide to jump."

Juille stared at the little gun, a confused realization taking shape in her mind that this war was to be unlike any war before in Lyonese history—unless she could escape somehow in time to prevent the use of these weapons. It would be as if the gods took part, so



strange and new would the weapons be on both sides.

The Andarean leader was looking at her uneasily. "Is it wise to let the princess hear about all this?" he asked Egide.

The H'vani turned and for the first time since that moment in the council hall, looked straight into Juille's eyes. She met the look almost happily, with a defiance he could not mistake. She was eager to bring into the open all her hatred of him, all her scorn. She wanted to put it into words, but before she could have spoken, he said in his faintly malicious drawl that she remembered very well, "You'd better stay here. Helia will keep you company." It was a patronizing tone. Half turned away, he added over one shoulder, "I'll be back—" and gave her a long look.

Speechless with fury, Juille watched him plowing away through the dust with the others. Everything he had said might have been deliberately calculated to enrage her. She twisted her wrists futilely against the cords.

Helia was looking at her with narrow, speculative eyes. Juille gave her a quelling glance and turned her back, looking up at the dust-swathed weapons with an angry, unseeing stare. Voices receded down the room. And as Juille's anger ebbed a little, she found that the rack of weapons made a very interesting sight. Just possibly some of those guns might still be loaded. If their look of shining, immortal efficiency could be trusted, she might, with luck, find one that had been left in working order.

And there had, she thought, been something a little false about the Andarean's casual dismissal of the guns. She would have been willing to bet that six months from now, if the H'vani, with their gift of weapons, were gaining the upper hand too quickly over the imperial forces, there would be Andarean patriots from the tunnels to make a gift of other weapons to the Lyonese. These Andareans were much too subtle to give away their whole stock to the first comer. And if they were really holding back weapons to offer the Lyonese should the

H'vani seem to win too easily, might not some of these devices on the wall be worth taking? If she could—if she only could—

This rack before her presented a display of curiously shaped weapons half shrouded in velvet-thick webs of dust. Some of them looked vaguely familiar. She didn't want those. Probably the Andarean had told at least a half-truth when he said many of them were simply variations of known things. But this odd, slim, flexible pistol, with a bell-shaped mouth and a coil of silver tubing twined about its length—

Juille turned her back on the wall and glanced down the room. Helia was watching the group at the far end, where men appeared to be handling what looked like a big folded net of loose meshes with nodes that sparkled opalescent in the light. She could not hear what they said.

Juille took three steps backward, soundless in the deep dust, hitched her cloak painstakingly out of the way and groped blindly with her bound hands through layers of velvety dust. She thought shudderingly of the spiders that had spun these webs, and it occurred to her that she would probably never like the touch of velvet again as she tore the clinging, thick softness from the gun she wanted. It was not easy, with her hands bound. She prayed for Helia to watch the other end of the room a moment longer—

There. Cool and slick against her palms, enigmatic, potentially very dangerous—the slender gun was hers. What might happen when she pulled its trigger no one could guess. Probably nothing at all. But the feel of it was heartening. She thrust it down inside the back of her belt and let her cloak swing over it. And when Helia turned again to glance at her, she was looking up at a rack of daggers with bored, aloof eyes.

"Those won't help you, highness," Helia said. "That cord I used on you is a woven plastic. Knives can't touch it."

"I know," Juille told her, not turning.

Voices drew nearer along the big, dim hall. Juille glanced around. She could see that Egide wore the lightning gun thrust through his belt, and Jair's bull-bulk was padded even further by the heavy net folded and looped through his own belt. She could see no third weapon. She could not even guess what the net was for. But she had her own secret now, and her feeling of utter helplessness was mitigated a little.

She watched them come slogging back through the dust, their voices rumbling between the walls. Now and then, curiously, a weapon's delicate blade rang with a thin sound when some chance note of the voices struck it to response, as if the immeasurable past protested in futile, tongueless, inhuman speech against this violation.

There was a new and triumphant assurance in the very carriage of the two H'vani as they neared her. Jair's eyes and teeth gleamed from his ruddy dark face, and Egide glowed with a sort of shining exhilaration.

At the door of the room he paused to look back along the shadowy depths, and his bright, careless face lighted. Then he grinned and unslung his harp. The others stared. Egide's calloused fingers swept the strings into a sudden, wild, wailing chord, and another, and then a third. The underground room rang with it, and on the wall a quiver of life leaped into shining motion as here and there a thin blade shrilled response. Egide laughed, a deep, full-throated sound, and shouted out what must have been a line or two of some old H'vani battle song. His voice was startlingly sweet and strong and true.

The arsenal boomed with the deep, rolling echoes of it. Somewhere hidden under tons of dust, a forgotten drum boomed back, distant and softly muffled. Some metal cylinder of forgotten purpose took up the echo and replied with a clear, metallic reverberation, and down the hall an æons-dead warrior's helmet rang with its hollow mouth like a clap-

perless bell, and fell clanging to the floor and the silencing dust.

Egide laughed again, with a timbre of sudden intoxication, and smote his harp to a last wild, shrilling wail, sent one more phrase of the song booming down the room. And all the room replied. The muffled drum boomed back, and the clear ringing twang of the hidden cylinder, and the little blades shrilled like tongues upon the wall, shivering and twinkling with tiny motion.

Echoes rolled and rolled again. Egide's voice sang on for a moment or two without him, diminishing against the walls. And this was no longer a thin, hopeless protest of the voiceless past against intrusion as the arsenal replied. Egide's was a warrior's voice, promising battle again, strong and savage with the savagery of a barbarous young race. These weapons had rung before, in the unfathomable past, to the voices of such men. Arsenal and weapons roared an answer to that promise of blood again, and the echoes died slowly among the blades and the drums and the hollow, hanging shields that might never echo any more to the sounds they were made to echo.

Juille, meeting the unashamed melodrama of his blue eyes and his laughter as he turned away, was appalled by a surge of genuine warmth and feeling. This was naked sentiment again, like the deliberate romance of Cyrille, but to her amazement, she found herself responding, and with an unexpected, overwhelming response she did not understand. Egide, laughing, had reslung his harp. He said:

"Come on—now the danger starts. You have a ship for us, Andarean?"

"Ready and waiting. "You'd better not try to leave, though, until dark."

"The real danger comes then," Jair rumbled.

Egide bent a shining smile upon Juille. "That's where you come in, my dear. We couldn't have a better hostage."

Juille gave him her stoniest glance and looked away. She was profoundly troubled by that moment of sympathy with his unashamed romanticism. It made her think of the warm, resistless mood which had engulfed them both on the dance floor, and that hour on the starry cloud—swift, irresistible, and vanishing to leave nothing but humiliation behind, and a stronger dislike and distrust of the man who could evoke such weakness.

They went back along winding, upward tunnels, past the carvings of forgotten history upon the walls, past level above level of successive cultures whose dust mingled now under the feet of new rival cultures, one of which must pass so soon. Several times they edged past danger points again, and the leading Andarean twice closed and locked metal grilles after them across their path. The implication was ominous, though no one referred to it aloud.

Egide's intoxicated assurance began to ebb perceptibly and he grew more thoughtful as they neared the upper levels. Juille, watching his broad back and thinking with a sort of detached passion how pleasant it would be to set the bell-muzzle of her new weapon against it, began to wonder presently at his preoccupation.

She saw him murmur to Jair, and saw the big red beard turn in the lamplit dimness to stare almost incredulously at his leader. Then Egide went ahead to murmur further with the purple-robed Andarean. Juille began to feel a bit cold. Were they talking about herself? Had the time come already to dispose of her? Surely not yet, before they were safely away—

When they came out onto a lighted level that showed signs of Andarean traffic, Egide halted. Helia and Juille exchanged an involuntary glance of mutual query. Egide came back through the column to them. There was a strange, stilled look upon his face, as if he had come to some momentous decision in the grip of which he seemed to want human nearness, for he put out both hands and

laid them upon Juille's shoulders. Automatic reaction against the lese majesty made her tense to shake him off, but something about the look in his eyes halted her.

"I'm going—out," he said, in a quiet voice not at all like the melodious roar that had shaken the arsenal below.

"They'll catch you." She had meant it for a threat, but his look subdued her and the words came out a warning.

He shook his yellow head. "I think not. They tell me there's a tunnel well into the forest from here."

"But the forest—" Juille broke off and stared up at him, a sinking in the pit of her stomach. For the forest marked the edge of that forbidden ground surrounding the temple of the Ancients. They looked at one another briefly, antagonisms forgotten for a moment. Egide was nodding.

"I think I need advice. None of us ever had this chance before. Now I'm here—well, I'm going to take it."

Juille stared up at him with real awe. Even the emperors of the Galaxy, with the stars of heaven for an empire, dared not think too deeply or too often of the living gods of Ericon. Long ago, she knew, there had been emperors who went to consult the Ancients in their temple. So far as she knew, none had done so for a long while now. Upon this one world of all the Galaxy, men lived side by side with the gods, and they had learned not to presume upon their nearness. The very aloofness of the Ancients, striking only to punish, never to reward, did not encourage familiarity. She looked up at Egide with eyes emptied of all thought but reluctant awe.

His own eyes were very still. He had not quite her feeling of the god's remoteness because, paradoxically, he had not lived so near them. But everyone tended to fall silent at the thought of the Ancients.

He looked down at her thoughtfully, and for a moment Juille knew, with a sort of angry certainty, that he was about to kiss her. Her pride and her scorn of him made that thought intolerable, but a dissolving warmth was running through her treacherous body as she met his look, and the most humiliating gladness that her arms were tied so that she could not resist. Then the humiliation drowned everything else as he let his hands fall and turned away.

"Tie her up somewhere until I get back," he said briefly to Helia. "Jair, come with me as far as the tunnel—"

Juille sat angrily on a floor deeply cushioned with dust, leaning upon a dusty wall. Profound dimness all around her was feebly diluted by the light of a distant lamp. Helia had left it, after a short disagreement with her companions. Juille realized that the Andareans probably distrusted the depths of Helia's loyalty to themselves where Juille was concerned, and oddly, she rather resented their distrust. The cult of the Amazon was still too new not to resent man's misunderstanding of its principles. Juille was conscious of a sort of fierce pride in Helia's betrayal of her lifelong trust, for the bleak ideal of Andarean loyalty. The Andareans' doubt of it was a slap in the face to all Amazons.

But she was not thinking of that now. She was mentally following Egide through the dripping green forest toward the temple which she had never seen. She knew it would be dark and broad and tall among the trees. She pictured Egide in his black velvet and charred silver mail, striding up to the portal and— But her mind balked at following him farther.

And that, too, humiliated her. It seemed to her that she had been wallowing in enforced humilities for the past several hours, each of them more irritating than the last. This was particularly so, because it involved the moral courage she prided herself on possessing. She did not like to think of Egide walking boldly up to a doorway so awesome that she herself scarcely dared visit it in thoughts. Even the knowledge that he was a barbarian and an outworlder, with

the courage of ignorance, was not too comforting. And presently, in the dimness, she began to wonder whether she could do as he was doing, supposing herself free again. Step in under that great shadowy, unimaginable portal and ask for guidance? Intrude her small human presence upon the living gods, whose millenniums of aloofness showed so clearly that they did not welcome human interference?

Even if she were free, would she dare?

Suddenly, hideously, there were tiny cold hands fumbling at hers.

The darkness reeled about her. Mad thoughts went racing through her mind —denizens of the lower levels, creeping up in the dark to seize her? Unseen things against which the Andareans locked their great grilles in vain? Tiny, clammy-fingered demons from some lost race's hell— Clammy-fingered—many-fingered—

Juille sank back against the wall and laughed hysterically in the dark, weak with relief, feeling a sleek, furry side brushing her wrist as the little hands tugged at her bonds. The *llar*, of course, but how . . . how could it possibly have followed or found her here? No *llar* had ever done such a thing before. They had none of the canine's fawning faithfulness. No, there must be rescuers close behind it, though how anyone could have followed her here unseen by the Andareans, she could not imagine.

She called softly into the dimness. No answer, but the *llar* hissed at her gently, rather like a man whistling in preoccupation as he works. A moment later, she was amazed to feel the cord slackening at her wrists. Knowing how efficiently Helia had tied it, she could not believe the little animal could have loosened the knots. Nor could its teeth have parted the strands no knife could touch. But her hands were free, and already prickling with the pins and needles of returning circulation.

She rubbed them together, luxuriating in the pleasure of relaxed arm muscles again, and then felt the *llar's* lithe, boneless weight on her knees. Something was thrust into her hands. Her fingers closed stiffly on a packet—a little leather bag. With fingers clumsy as thumbs, she explored it.

A tiny cylinder fell out, and something like a mirror on a chain, and what felt like a card. She knew the shape of the cylinder. It was a needle-beam flashlight that was weapon and torch in one. Cautiously, awkwardly, she switched on the flash to its weakest power. In the little blue-white circle of its light she could make out writing on the card.

It was a message of almost incredible impersonality:

> I am sending you the first completed focusing agent for our weapon. Center your target in the cross-hairs, then press the white stud. Target will register in the machine here; can be destroyed at will by pressing the black stud. Sorry this is a model, good for one shot only. Choose well. DUNNAR.

Juille reread the note slowly, puzzled by its laconic detachment. This might be a problem in ethics instead of the desperate reality it was. She saw in her mind's eye the strange, avian face of the envoy as it had so often regarded her with an impersonal, lidless gaze. She could not imagine emotion showing in it. Not even his own danger, she remembered now, had moved him at all when he came in from space with the weapon. Certainly no peril of hers moved him. She sensed some unfathomable purpose of his own working out, calmly and unhurried, behind all that had just been happening. Was he an Andarean? Certainly there was something behind those great, unwinking eyes, something locked secretly in the narrow skull, that evoked awe and distrust together.

Well, at any rate, now she had a weapon. Two weapons, for the flashlight would serve, too. She turned the thing like a mirror over in her hand. A double lens on a chain, she saw now, each lens threaded with a cross-hair and manipulated by studs set in the tiny frame. A white stud, a black one. Such a simple thing to carry that deadly

power. She tossed it up and caught it in her palm, grinning with sudden, fierce confidence. The tables were turning a little. Egide had left her bound and helpless; he would come back to her free and armed with a weapon of such surpassing treachery as no race had owned before, a weapon that struck out of empty air, in solitude, at the striker's will. But since this was a model, it would strike only once. She cursed that restriction in a whisper. Would it be Egide, then? Her feeling for him was too much a jumble of passionate contradictions now, to be sure. Although—

The *llar* squeaked impatiently at her knee. She glanced down in the faint blue light. "Well, little friend?"

It was hard sometimes to know just where to place the limitations of that tiny animal brain. The *llar* were like cats in their fastidious withdrawal from any human attempt to probe their small minds or catalogue them according to human standards. She thought her own pet understood a limited vocabulary very well. She said, "What is it now? Where *did* you come from? Is there danger?"

The great benign eyes stared up at her; the furry body twisted away and then back as if in an urgent plea to follow. Juille said, "All right," and stood up, brushing off the thick dry dust. The *llar* scuttled to the door and peered out. Then it scuttled back and looked up expectantly. "Run along," Juille told it. "I'll follow."

She slipped the lens chain over her head and dropped the circular instrument down inside her tunic. It would look like some innocent ornament if anyone caught her now. But she felt, without knowing why, a curious faith in the *llar's* ability to guide her out of this place in safety. She even experienced an illogical flicker of gratification that the impersonal little beast had troubled itself so much in her behalf. The entire performance was one no naturalist would have believed possible, certainly no owner of the proud, fastidious animals.

She went swiftly along the tunnel, over the cushioning dust, lighting her way with the dimmest blue radiance of her torch. It could be changed to a weapon of needle-beam force by a twist of the handle if anyone came out to intercept her, but her unreasoning faith in the *llar* was justified more deeply with every passing moment, for it led her

along tunnels that seemed to have been uninhabited since the last Andarean emperor died at the hands of the first Lyonese.

Watching the sleek, lithe body flowing through the dimness, Juille wondered at its unerring certainty of the path. Some homing instinct, or actual knowledge of these passages? No one knew enough about the *llar* species to answer that.

The chain of small, flower-shaped footprints in the dust led her on and on. Up level, down level. Over crumbled ruins, through chambers of resounding echoes and caverns muffled in age-old dust.

They must be nearing the end of the journey now. She could smell fresh air blowing along the tunnels and smiled as she pictured the excitement in the palace when she came out. Her deep uneasiness about the unknown weapons of the Andareans would be appeased soon; those weapons would never now be turned against her. And she thanked her imperial ancestors that Egide had thought he must consult the Ancients, for it gave her the time she needed. The H'vani and their smuggled weapons would never leave Ericon now.

Her own emotional reactions to the immediate past and the immediate future were too tangled to sort out. She didn't want to. That would come later. At any moment she would be coming out into the bustling exhilaration of the palace, and her long inactivity and helplessness would be ended. She smiled into the dark.

At her feet the *llar* scurried, rippling, on ahead.

The end came suddenly. They turned a corner and an unbarred door hung half open before them. The *llar* gave one small, whispering cry and then drew aside into the shadows of the tunnel. Cautiously, but with a beating pulse of triumph in her throat, Juille pushed the door open. Words were on her lips—urgent commands, reassurances, all the details of the plans she had been working out to put into practice the moment she reached her destination.

But she stood open-mouthed in the doorway and said nothing. There was no one to say it to. A gust of sweet, rainy air blew past her, the smell of green things and fragrant wet earth. The freshness was delightful after so long underground, but this was no palace scene. It was not even a city garden, but an empty, dripping forest stretched out as far as the eye could see. Nothing stirred anywhere but the patter of rain on leaves.

Juille glanced wildly around for her little guide. It had vanished. She shot a blue beam around the corridor behind her, finding only a confusing array of fingery footprints that vanished into the dark. She cursed the evasive little beast in a voice that was close to tears. To come so near victory and then find only this!

For she knew what this forest must be. Indeed, when she cast her blue light down she saw what must be the footprints Egide had left when he came out this very tunnel into the woods where the Ancients lived. Forbidden woods, uncharted, unknown, kept sacrosanct by countless generations of human life on Ericon.

She glanced about uneasily. Jair and the Andareans could not be far away. But what she could do next she had no idea. Where or how far the city lay was impossible to guess. Certainly she could not return through the pathless honeycomb of the caverns, and if she tried the forbidden woods she might wander for days in the wrong directions. If the *llar* had been visible now, she might have blasted it with a needle beam for bringing her so far astray. But there was no help for it. She would have to get back to the city, hit or miss, perhaps too late to do anything but warn them of impending blows from nameless weapons.

The memory of Egide's glowing confidence when he came back to her armed with the Andarean gifts, gave her a feeling of sinking dismay. The impending

conflict had taken on too many prospects of unguessable proportions. The effect of the new weapons might be overwhelming, unless she could find some way to prevent it.

Unless—Juille stared out speculatively through the trees. If she could delay Egide—but how could she, short of killing him? And did she want that? Her mind flashed off on a tangent—he had stayed his hand, too, when killing her might have meant a great deal in the outcome of the revolt. Her scorn for that weakness had gone deep. Yet she was hesitating now in the face of the same problem. She set her chin.

This was the way he had come, down this narrow glade into the forest. For all the woods seemed to slope downward as if toward a sunken path that wound between the hills. She could trace his tracks, perhaps, in the sodden ground.

If she hunted a way out of the forest, she might wander for days, while Egide and Jair escaped unhindered with their loot. But if she followed Egide now, if she used her needle beam upon him, or the lens of the Dunnarian weapon—would Jair leave Ericon without him? Could she gain time enough to find her way back to the city, leaving Egide dead here in the rainy forest?

It was too confusing—she did not know what she wanted. But this alternative seemed best of all the impossible choices she had. Follow Egide—let the rest take care of itself.

It was very quiet here in the woods. Juille could not remember ever having been quite so alone before. She walked through a drowned green gloom beneath the dripping trees, making no sound. Egide had gone this way before her; she found his prints now and then in bare places along the valley. She strained her ears and eyes for him returning, but nothing moved except the leaves, nothing made any sound except the drip-drip of rain and the occasional liquid bubbling voice of a tree frog enjoying the wet.

And presently, in spite of herself, the silence and the solitude began to lull her senses. This was the holy place, and the old awe began to oppress her as she walked. Through this quivering gloom the gods had moved upon their own unfathomable errands; perhaps they were moving now. She looked about uneasily. She had seen the power of the Ancients manifested tangibly, terribly, overhead in the open sky so brief a time ago that the memory was still appalling.

And then sudden anger washed over her. Egide had come this way. He was a fool, blundering in ignorance through the sacred woods, but wherever he dared to go surely she dared follow. Even into the temple itself.

Her mind went back to those troubled thoughts in the solitary cavern, before the *llar* had come. Could she go? Could she not, when Egide had ventured there and perhaps learned celestial wisdom that might turn the tide of battle? For the Ancients *did* give advice, so legend said. If human supplicants dared make the pilgrimage, they sometimes brought back knowledge that could make them great.

Well, it would be humiliating to come second into their presence, but if Egide had come and gone, Juille began to realize that she must, too. Indeed, in this rainy solitude she realized even more. Her mind was clarifying itself of shock and confusion, and now as she walked alone, it began to grope back toward that firm bedrock of principle and duty upon which she had prided herself so long. In her mind she had faltered at the thought of killing him. Far back, deep down, the roots of weakness were there when she thought of Egide. Even to herself, she could not admit that yet. But subconsciously, perhaps, she knew herself as weak as he in this one thing, and in her subconscious sought to justify herself by surpassing him. It took less courage from Egide than from her to face the Ancients in their temple, because he knew less about them. She knew this much clearly—that she would never

be at peace again with herself if she let him outface her here. Impatiently, she shrugged the tangled thoughts away. Time enough for introspection if she lived through the next hour.

Before she left the tunnel, Juille had taken the belated precaution of removing her bell-mouthed pistol from its uncomfortable hiding place and pushing it up into the lining of her helmet, where its flexible barrel adjusted to the curve. Should Egide by any mischance see her first here in the woods, he might not think of searching there for this last reserve, unpredictable as the weapon was. But she did not mean him to surprise her. She was better prepared than he for the meeting before them, and she knew very well that if they met unexpectedly only one was likely to return.

All the strange undertones of their relationship, confused, twisting together, not clear to either, were unimportant in the basic motive behind their final reckoning. She must not forget that. She must let nothing swerve her. If she died before Egide, the H'vani would most likely sit next upon the throne of Ericon. Egide knew that as well as she, and she thought that this time he would not forget it.

How did a traveler through this trackless wood know the way to the temple? Juille could not guess, but she did know the way. It was a part of the magic of the Ancients which she could feel thickening about her in the fragrant green silence as she went on. And how did one know what the temple would look like, when no human creature had ever brought back word of it? She could not guess that, either—but she knew.

She knew without surprise how the great black walls would lean inward above the trees that hid their foundations. She stood almost without breathing, gazing up between the branches at that towering, massive darkness which housed the living gods.

It was a little while before she could bring herself to come nearer. Only the thought of Egide made her do it. He must still be in there, in the unthinkable sanctum of the Ancients, hearing the voices that no living man had ever told of. At the back of her mind, a craven alternative stirred briefly—why not wait until he came out, and do then whatever impulse moved her to do? With a mental squaring of the shoulders she dismissed that idea. No, if he were in there still, she would confront him before the very altar of the gods.

Her heart was beating heavily as she went up the slope toward those great dark leaning walls that breathed out silence. She saw no door. The grassy furrow she had been following led up between the trees to a clear space against the solid black wall, and ended there. She was not breathing as she took the last step forward and put out hesitant hands toward that blackness.

She could tell then, of course, that it was not there at all. The walls were black and the dark inside was black, and the entrance made no difference between them to the eye. Light from outside did not penetrate over the threshold. Juille took a long, deliberate breath and stepped forward.

She walked three paces through utter darkness. Then light began to show faintly underfoot. Glancing back now, she could see the outlines of the portal, and the woods beyond looking indescribably changed and enchanted, like the woods of another dimension. Beneath her feet the light grew slowly stronger as she went on.

Above rose only the fathomless heights of the dark. And there was no one here but herself. She felt that with unreasoning certainty. The terrible, oppressive presences of the gods, which she had expected must paralyze her with their very awesomeness, she did not feel at all. And she thought Egide was not here, either. The dark around her had that vast, impersonal emptiness she had known before only during flights through the emptiness of space—cold, measureless, still beyond all human compass.

The light from below was strengthening, with an oddly vertiginous effect. She could see nothing down there, not even the substance of the floor. If she walked on pavement, it was pavement of the clearest crystal without flaws or jointure. She was like one walking above a void on invisible supports that might vanish before the next step. When she thought of that she slowed automatically, unable to control the fear that each next step would overreach the edge of the flooring and plunge her into the lighted infinities below. By contrast, the dark overhead was almost a solid, unrelieved in the least by any reflection of light. The impression grew so strong that she began to imagine the blood was pounding in her ears and temples from reversed gravity, as she walked upside down like a fly across a ceiling of glass.

She took a few more dizzy steps and then halted, too confused and frightened to go on. She had forgotten Egide. For the moment, she had even ceased to expect the Ancients. There was nothing anywhere but herself standing upon a crystal ceiling looking down into the sky, frozen with awe and terror.

Nothing happened for what seemed a very long time. No sound, no motion. Juille stood alone in the darkness upon the light, not conscious of any presence but her own. She was never conscious of any other presence, from first to last. But after a long interval, something began to happen.

Far, far away through the crystal on which she stood, a lazy motion stirred. Too far to make out clearly. It moved like smoke, but she did not think it was smoke. In a leisurely, expanding column it moved toward her, whether swiftly or slowly she did not even think, for awareness of time had ceased. And she could not tell if it were rising from fathoms underfoot or coiling down out of the sky toward her as she stood upside down on a crystal ceiling.

Nearer and nearer it came twisting, intangible as smoke and moving with the beautiful, lazy billowing of smoke—but it was not smoke at all.

When it had come almost to her feet it expanded into a great, slow ring and came drifting toward her and around her and up past her through the solid substance on which she stood. And as the ring like a wide, hazy, yawning mouth swept upward a voice that she thought she knew, said quietly in her ears:

"You may speak."

The shock of that voice, when she had felt no presence near, was nothing compared with the deeper shock of the voice's familiarity. "I can't stand it!" Juille told herself in sudden hysteria. "I can't!" Was there no one at all to be trusted? Did everyone she knew have a second self waiting behind veils of intrigue to speak enigmatically when she least expected it? First Helia—now— Whose was the voice? It might be her father's. It might be her own. It might not be familiar at all until this terrible enchantment made it seem so.

A second intangible yawning ring swallowed her and passed by.

"You may speak," it said with infinite patience, in exactly the same inflection as before. And this time she decided wildly that it must indeed be her own voice.

"I . . . I—" What did she want to say? Was she really standing here upon a ceiling of glass, speaking in the god's voices and answering herself with her own? It could not be the gods who spoke. They were not here. No one was here but herself. She knew that. She had an unalterable conviction of aloneness, and it must be herself who spoke with the yawning smoke-mouths and answering herself in the same stifled voice.

"You may speak," the third mouth said, and drifted on past her into the solid darkness above. (Or was it really below?)

"I . . . my name is—" She paused. It was ridiculous to stand here telling

her own voice who she was. She tried again.

"I came for guidance about the . . . about what to do next. So many lives depend on me—tell me how to save my people from the H'vani."

The smoke shifted lazily as if in a little breeze. Then a series of widening rings floated up—or down—around her in quick succession, and as each went by, a voice spoke in her ears. One of them was familiar. It might still be hers. The others she had not heard before, and this multiplicity of voices coming just in time to shatter her theory that she had been talking to herself, was intolerably bewildering. The voices spoke to one another impersonally, as if she were not there.

"She says she came for guidance."

"She came out of jealousy."

"She cares very little for her people. It was for herself she came."

"Is her race worth saving?"

"They must have their chance, remember." (This was the voice she knew.) "The game is almost played, but not quite finished yet. Give her the guidance she asks, and then—watch."

"But this is so wearying. We have seen it all before. Is there any good in her at all?"

"Little. Little enough. But let the game play out."

And with that last ring the dizzying swirl of them past her face came to a pause. Juille's head was reeling. For a while, nothing happened except that the column which was not smoke swayed gracefully like a hazy snake. Then it widened to another mouth that came gaping up through the floor to swallow her.

"You will have your chance to save the race that bred you," the voice she knew so well said leisurely. "Think well before you take it, for your instinct will be wrong. Upon you and the next few hours the fate of your race depends. What you are yourself will decide it."

The lazy cloud floated past and faded into the darkness beyond her.

And then a vertigo came upon Juille, so terrible that every cell in her body seemed struggling against every other cell to right itself—to separate and right itself even at the expense of partition from the rest. Up was down, and down was up. In the dreadful, wrenching confusion, she thought she had one glimpse below her of rolling clouds and rain that came lancing straight upward toward her feet, while she saw despairingly that treetops, head downward, were blowing in a strong breeze above her. For an instant she stood reversed in space, like an image which the retina reverses upon the brain.

And then she was stumbling through darkness again, with the universe right side up.

She was stumbling through a darkness all clouded with swimming colors. Would the gods appear at all? Was the audience over without a glimpse of them? Or would they rise presently through this swimming dark, vast, inscrutible, wearing no human shapes.

Grass was slippery beneath her feet.

Someone seized her by the shoulders and a man's voice said, "Open your eyes! Open your eyes! You're all right now."

"Egide!"

Her eyes flew open. There was no darkness. The temple— She looked around wildly. Egide's hard grip bruised her shoulders. Automatically she felt for the needle flash that was her only immediate weapon. Nothing. Her relaxing fingers must have let it fall somewhere in that bewildering darkness. She was still too dazed to understand what had happened, but reflexive animal reactions made her whip into motion, squirming away from his grip.

"No you don't." Egide's hands slid down her arms to clench like iron about her wrists. Memory of Helia's training came back now and she arched all her whipcord strength to pivot him off bal-

ance. But he knew that maneuver as well as she, and it resolved after a moment into a blind, furious hand-to-hand struggle. And since he was much stronger than she, with the sheer, solid bulk of muscular weight, in a short while she hung gasping with rage against his chest, both arms twisted agonizingly behind her.

"This," said Egide with a breathless grin, "is luck!"

"Luck!" Juille's blind and frantic brain cleared a little at the word. Luck? Perhaps it was. At any rate, now she had found him. What she would do next she had no idea. Somehow she had to gain the upper hand, keep him from Jair, delay the H'vani flight until she had power enough to stop it. And the Ancients had promised her a chance—

She made herself relax. "Well?" she said coolly.

Egide frowned down at her, taken aback. "Not angry?"

No, she could not afford to be angry. Somehow she must find some lever to control him, and she must control herself until she had. She must control more than her temper— It was infuriating that this nearness to him made her heart quicken and sent a treacherous weakness sliding through her limbs. Hanging helpless against his shoulder, her wrists fixed immovably in his grasp, Juille looked up at him with forced detachment. She was an Amazon. She must remember it. Her heart and mind were trained to a discipline as stringent as her body's, and they must not falter.

She made herself study his face with critical calm, looking for the flaws of character she had marked there before. Coolly she regarded him. The fine-grained texture of his weathered skin. The sweat upon his forehead from their sharp struggle, and the drops of blowing rain. Rain beading his hear and the fair curls of his short, careful beard, and his curling yellow lashes. The blue eyes narrowed as he returned her scrutiny.

Yes, it was a weak face. Too sensitive a mouth. She knew she would never trust an Amazon with that look about the mouth and eyes. Sentiment and self-indulgence showed there plainly. And other qualities that might pass as virtues in a peacetime world. But she remembered the code of the Amazon that demanded a sacrifice of virtues as well as vices to serve the common good. Pity, mercy, compassion—she saw them all here and she scorned them all as they looked down out of Egide's face.

But by the simple, unfair advantage of weight and muscle, he had the upper hand and she must alter that before she could afford to scorn him. She made her voice impersonal and asked quietly, "How did you catch me?" And between the question and his answer, she knew suddenly what she must do. One sure weapon remained to her. Somehow she must trick him into freeing her long enough to use that lens the *liar* had brought. Afterward—well, then she would have him on a leash, with death at the far end of it. The threat would be a whip to make him obey whatever commands she chose to give. After that, there would be time enough to consider these tangled personal feelings that were undermining all her Amazonian resolve. First of all, she must get away.

"Catch you?" he was saying. "Don't you know? You came out of the temple with your eyes shut and walked down the slope. I was sitting by the . . . the door there, under the trees. I was—thinking."

Juille glanced around. Trees everywhere. No great walls leaning inward above their swaying tops. She said:

"Where are we? The temple—it's gone."

"Yes. I followed you away from the door. Not very far—but it's gone now."

They looked up together, searching for those leaning walls. But the gods had withdrawn with a finality that seemed to deny they had ever been. Juille had a sudden, desperate feeling of loneliness and rebuff. The human mind needs so ardently to lean upon its gods. Even

upon terrifying gods, cold and impersonal and aloof as these. But the Ancients had heard their pleas, tolerated their uninvited presence, sent them forth with comfortless, enigmatic words, careless whether humanity lived or died. As if they had tired of human doings altogether. The forest seemed very remote about them just now. It, too, would go on unchanging, whether man lived or vanished from the face of Ericon.

Well—Juille squared her shoulders mentally again—she was far better prepared to face such a universe than Egide would ever be. As to what the gods had told him, it wouldn't matter once she centered him in her lens. What *had* they told him? Overpowering curiosity suddenly filled her.

"What . . . what happened in the temple?" she asked him a little diffidently. He looked down at her, his eyes going unfocused as he remembered. She was pleased to notice that his grip on her wrists had slackened perceptibly, too. A little more conversation and perhaps—"Tell me what happened," she persisted. "Did they speak to you? Egide, was it really upside down?"

He glanced at her briefly. "You must be crazy," he said.

Juille stiffened. Another count against him. But curiosity was still strong. She tested his loosening grip very subtly and said again:

"Do tell me about it. You saw the light, and the . . . the smoke rings—"

"I saw a light, yes." His eyes came into focus again and he scowled at her. "Smoke rings? You're out of your head. There was a high altar like a wall, with the . . . the figures . . . above it. What did they tell you?"

Juille opened her mouth to protest, and then closed it again, trying to remember what it was they had said. They? Had there really been more voices than one? Voices—voices. For a tantalizing instant, she poised on the very verge of remembering whose that familiar tone had been. But when she reached for the memory, it slipped away.

What was it they had told her? They'd said unpleasant things, certainly. Something about a game that was almost played. Some assurance that she would have her chance—what chance? When? And her instinct would be wrong.

"Never mind," she said. "But I'm not concerned about the H'vani any more. Not now." And she smiled secretly. After all, it was nearly true. For she thought she understood what her chance would be. Egide's grip was slack. In a minute or two she would wrench loose, spin away from him into the forest, hide somewhere just long enough to center his figure in her lens as he blundered after in pursuit.

And then—well, she might not need to kill him. The threat might be enough. With luck, she might even find her way back to the city before Jair gave up waiting and tried for open space. Night was hours away still.

He looked down at her strangely. "You're lying," he said. "Unless—" He hesitated. "You know the legend, don't you? Is there any truth in it?"

"That they'll give you bad advice if they've decided against your side? I don't know." Juille exchanged a grave, long look with him. "I don't know. Do you believe it?"

He hesitated a moment longer, and then his eyes crinkled with laughter.

"No, I don't. Whatever they told you, I know how to win now."

She gave him a speculative glance. "Then they lied to one of us. Because I know, too."

Egide threw back his head and laughed. The confident, full-throated sound of it rang through the forest, silencing the tree frogs' bubbling songs. His grip upon her wrists was the merest touch now. Juille raked the woods for the nearest refuge, set her teeth and wrenched away. And she knew even as she wrenched that she had moved too soon. Sick dismay flooded her as he whipped out a long arm and grazed her shoulder with clutching fingers—grazed—gripped—held.

Her momentum spun them both around and it was touch and go for a moment. Then his big hands locked upon her shoulders and he jerked her toward him so that she smashed breathlessly against the hard armor of his chest and was pinned there in a heavy embrace that had no tenderness in it.

Not then.

They stood together in that close interlocked intimacy which only lovers or struggling enemies ever share.

"They gave you the wrong advice, then," Egide told her, as if the scuffle had never happened. Only his shortened breath testified that it had. "They mean your side to lose."

"How can you be sure?" Juille asked him, straining hard away against his arms.

And he sobered as he met her eyes. He could not be sure. Neither of them could ever be sure, until the last battle ran to its bloody close. There was silence between them for a moment. The dripping forest rustled all around, full of the whisper of fine rain upon leaves, the throaty, dovelike throbbing of tree-frog voices, the murmur of the wet, soft breeze. And there was a feeling of sorcery in the air. Perhaps the vanished temple still lifted its great inward-leaning walls above them, filled with the watching eyes of gods and the gods' humorless, dispassionate patience that waited to see their doomed supplicant take the first step toward his own ruin.

Each of them was suddenly very thankful for human companionship. For an instant they were no longer antagonists, and the struggle in which they were locked resolved itself imperceptibly, with the old treachery their bodies knew, into an embrace neither intended. In the back of their minds, neither of them forgot that they were enemies. Each remembered that only one of the two might leave these woods alive. But for the moment, another memory came back to engulf them both, blotting away the forest and the rain and even the aloof presence of the gods.

They did not speak for a while. They looked at one another with remembering eyes, and Egide's embrace held no more of its savage coercion, and Juille was not straining against it. Presently, he said in a low voice:

"Juille—did you know me on Cyrille?"

She shook her head in silence, not sure that she wanted to recognize this mood with speech. Before, it had been a thing of the senses, to let slip when the senses released it, and with no words to pin the remembrance inescapably in their minds.

But Egide went on. "I knew you," he said. "I meant to kill you. Did you guess that?"

She nodded, her eyes on his face watchfully.

"But no one else ever knew about it," Egide told her. "Not even Jair. No one knows at all but you and me."

Juille stared up at him. She knew the truth when she heard it, and she thought this was the truth. If she accepted it, a great many preconceived ideas would begin to turn themselves over in her mind. So many implications lay behind that simple speech—but just now she could not pause to think. Just now Egide was about to kiss her—

It was a long kiss. Their first since Cyrille, and perhaps their last. While it endured, all sound blanked out around them and a dissolving intoxication loosened all Juille's muscles, and even her mind ceased to be wary and afraid.

Then Egide's unsmiling face was looking down at her from very near, an eagerness and a humility upon it she had never seen there before. And suddenly she knew how treacherous this was. Egide had surrendered without reservation to it. In this moment she knew she could bend him to whatever purpose she chose. Even compromise with the Lyonese. Even peace, if it were peace she wanted.

Abruptly she was frightened. This strong emotion between them was a drug

and a drunkenness more dangerous than wine, the most treacherous thing that ever happened to an Amazon. Because he might be able to sway her, too—and she desperately feared her own surrender. Like drunkenness, this emotion distorted the focus of reality, dulled reason's keen edge, reduced the mind to a maudlin softness that denied all values but its own. It was no more to be trusted than drunkenness. It was as false as the illusions of Cyrille. As false, and as irresistibly lovely, and as dangerous as death.

If she ever gave up to it, the moment was not now. Later, when she had him under tangible control— He was weak now, but the weakness might not last. She needed the leash of the Dunnarian weapon, and the whip of the threat it held. She lifted her eyes to Egide's.

He was holding her like a lover, waiting with an eagerness he made no attempt to conceal. This was the moment the Ancients must have meant. Now, in his weakness—now!

Juille lowered her head and struck him a heavy blow beneath the chin with her helmet. In the same moment, she leaped backward out of his embrace and whirled toward the nearest trees.

Egide dropped—dropped to hands and knees and thrust one leg out to its full, long length. Juille saw just too late what was coming. Futile rage flared up consumingly in the timeless instant while she struggled to avoid him. She could not let Egide frustrate her again—she could not! But momentum was too much for her. She felt her own foot catch against the outthrust leg, and she felt herself plunging face down into the underbrush beneath the trees.

Hard hands dragged her upright before she could move. She had a glimpse of blue eyes blazing with anger. She had one flash of a big square fist, startlingly foreshortened, hurtling toward her face.

Then moons and stars exploded between her and the green woods.

With no consciousness whatever of elapsed time, Juille found herself lying on a bank of soft blue grass at the edge of a lapping sea. Her mind was as blank as the mind of Adam first wakening in Eden. It took her a perceptible while to remember who she was. That returned after a little uneasy groping, but where she was—

She sat up with difficulty. Her hands appeared to be tied behind her. And then memory rushed back in a flood. Egide, the sacred forest—her chin felt sore and swollen— That moment of warmth and treachery—and humiliation.

How much time had passed? And where in the Galaxy was she now? Egide must have left her here, securely tied, while he went about some private business—the weapons? Had the Ancients given him some special knowledge? It was painful to think. Too many questions spun through her mind. She looked confusedly around.

Low blue hillock, blue lapping water out to the hazy horizon. Behind her, a high wall of colored stones, with an iron-hinged gate in it. And to left and right, willows that trailed their yellow-green streamers down across the grass.

Blue grass— Grass on Ericon was green. She listened. A faint breeze was moving among the willows, and upon the beach scalloping wavelets whispered. No other sound. No craft at sea. No Egide. Nothing even remotely familiar anywhere she looked. She had a moment of serious wonder whether she could possibly have switched personalities with some unknown woman, under the power of the all-powerful Ancients.

With some vague idea of looking beyond the willows, she walked awkwardly across the beach, off-balance because of her bound hands. The yellow-green leaves streamed across her shoulders like extravagantly flowing hair as she pushed through their swaying lengths. A roadway curved down toward the water a little distance away, and she could see people strolling along it, laugh-

ing and talking. As she watched, a young couple came toward her, swinging hands, murmuring together. She called.

The strolling lovers did not turn their heads. Juille called again, more loudly. They did not even glance around. Juille shouted in a parade-ground voice that made the willows shiver. No response. The girl looked up to smile at the young man, and her face was turned so that she must see Juille, but she gave no sign.

Not sure whether to be more angry or alarmed—was she invisible?—Juille pushed forward toward them through the leaves. And suddenly something moved in the air before her—someone materialized in her very face, ghostlike, blocking her path. Juille started back. The ghost did, too. It was a ghost in cloak and helmet, with its arms behind it—

Juille stood perfectly still before the faint reflection of herself. Presently she pushed out one knee and felt a transparent wall between her and the road. Shouldering up to it, she traced the unseen barrier from the willow grove up to the stone wall. By the time she reached it, she had an idea where she was.

The strolling lovers went obliviously past, laughing to one another, and vanished around another clump of trees. Along the road a boy with a donkey came whistling, but Juille made no attempt to signal him. He did not, she thought, exist. Or if he ever had lived, most likely he had been dead for some while. There was almost certainly war upon the world he lived on. There was war upon most worlds now.

Juille went up the slope toward the wall, her lips set thinly. She thought she knew what she would find there, and in a moment or two she did—a rectangle of cloudy glass set into the stones. That settled it. Egide, for some unfathomable reason of his own, had brought her back to the pleasure world where their brief idyl had run its course. This was Cyrille.

Why was she here? She had a brief, wild idea that Egide might have imagined the revisiting of old scenes would win her anew to the evanescent mood that had once enchanted them both. But in the urgency of current happenings, she knew not even Egide would attempt anything so fantastic. No, if he were here—and he must be—then Jair and the Andarean weapons would be here, too. Obviously they had come this far at least without interference from the imperial forces. Was this, then, a stopover on their way to the H'vani base, or had they a reason for visiting Cyrille? Or—might they have dropped her here and gone on alone? No—because the real danger from the Lyonese space guards lay beyond Cyrille's orbit, not inside it. If they needed her at all, they needed her as a hostage to pass them by the guards.

Well, they must be here, then. Somewhere on Cyrille, with their nameless weapons, and perhaps armed also with advice from the Ancients that could certainly mean no good for Ericon. She could not even count very much on interference from the skeleton staff of attendants left on Cyrille. The H'vani were armed and ruthless. She could imagine Jair making very short work of anyone who crossed his path. Her very presence, bound and helpless in this room, testified that no staff member had lived long enough to spread an alarm.

She stood before the gate, looking around what must be a moderately small room, though her gaze reached out unhindered toward distant horizons. The grass, the foremost willows, the wall were real. Perhaps some of the lapping water. But the rest was all illusion reflecting upon mirrored walls. Somewhere beyond them, Egide and Jair would be at work—on what? And alone? Probably, unless some of the Andareans had come on with them. Their own ship and men would have been impounded from the very first.

Well— She twisted at her tied hands hopefully. The bonds felt softer, like cloth instead of the knifeproof cord

Helia had used. How could she test it? There were no sharp stones; the glass walls would not break, she knew. There was nothing that—

Juille laughed suddenly and fell to her knees. She had her spurs. It seemed interminably long ago that Helia had put them on her heels for a morning ride. In the crowded lifetime since so much had happened that she knew she might never ride a horse again, perhaps might never live to see these spurs removed. But they could do her one last service now, if her cords were made of cloth. She strained backward, sawing precariously.

The rowels bit satisfyingly into her bonds. It was backbreaking and tedious, but it was working. After a long while she felt the cords let go, and for the second time began to rub the prickles of returning circulation from her hands.

And now—what? To all appearances, Juille still sat upon an open beach with blue water breaking at her feet. It was difficult to believe that the walls of a small room were really close about her. The door itself probably lay beyond the gateway in the wall, but she knew it would be locked— It was. Her only contact with the outside was the communication panel, which might be dead. Still, since the illusion of this beach with its strolling ghosts persisted, the communications might be open, too. It was difficult to guess what effect the death of Cyrille's operators would have on the persistence of Cyrille's illusions. Perhaps none at all.

Rubbing her wrists, she walked up the blue grassy slope and pressed the buttons for sight and sound beneath the panel. In the brief moment while it glowed into life, she heard a distant murmur of laughter and saw the young lovers strolling again beyond the trees. The sight of them was oddly dreadful, and somehow oddly pathetic. They were so perfect an illusion of a perfect, idyllic past which might never come again, a peacetime when lovers could walk unheedingly over open beaches. Somewhere, the originals of this living reproduction had once walked hand in hand. They might have grown old many years ago; they might have died yesterday or last week on some other world under the bombardment of H'vani guns. Or they might be cowering at this moment in some underground shelter shaken with the detonation of bombs. But they walked here in an eternal moment of laughter and murmuring, beside a bright blue sea, and they turned indifferent, blind face to Juille's predicament. Their detachment partook, in a way, almost of the Ancients' divine disinterest, or of the cold, still, passionless reaches of space.

Juille looked away.

The panel was lighting up. She looked through it into a corner of some office, with a black glass desk below a wall board on which lights winked busily. Across the desk, a dead man sprawled. Juille looked at him stonily and pressed the buttons again. She did not know the proper combination, but she thought that eventually she must find a room where the men she sought were working. Probably the control room. Because, until she knew better, she must assume that the H'vani had come to Cyrille for a purpose, and she knew the only purpose in their minds would be destruction. The control room, she had heard, was the only one here with a visual screen that looked down upon the great green world of Ericon. She hunted on and on.

And she found other dead men. She found offices wrecked and charred. She found empty rooms. But she found no living creatures until at last, by a lucky accident, she finally hit upon the combination that opened a little window upon the men she was hunting. And her guess had been right. They were in the control room.

Its vast space was crowded with the machinery that kept Cyrille upon its course and filled with the living illusions of its fantasies. One wall was glass, like

a telescopic lens focused upon the world beneath. And though that world was directly below, in the window it stood at right angles to the floor like a looming green wall.

Before it, two men were laboring busily. Juille, watching as if from a small opening high up on the side of the great room, saw Jair's red head and beard, and Egide's yellow curls. No other figures moved in the room. They had come on alone, then. And they worked with utter absorption before the glass wall.

The object of their interest was a great searchlight, far larger than themselves. They had maneuvered it before the window on its rolling frame and were centering its focus now upon something outside, with much reference to a chart engraved upon the wall. Over the face of the light, a metal net with rainbow nodes had been spread.

Juille remembered that net. Watching, she felt a cold sinking in the pit of her stomach. She had no idea how the arrangement would function, but its implication was very plain. The Ancients had betrayed her, then, and Helia's people had betrayed her, and unless she could get out into that room very soon, the Lyonese Empire would be betrayed, too.

For Egide had found a substitute for his invading fleet. Here inside the defenses of Ericon, was a ship so cunningly disguised that it could swing a path of destruction all around the planet. He was making Cyrille itself that ship. And Juille thought to herself that if this were the advice the Ancients had given him, then they must have lied to her and the Lyonese. For, unless she could put a stop to it quickly, the world below them was certainly doomed.

Until now, no weapons had ever existed strong enough to bridge the airless gap between Ericon and its satellite, but the confidence showing in every gesture of the men she watched must mean that such a weapon existed now. This searchlight, netted with shining, colored bulbs. It was hard to believe that the light could be cast so far, or that the simple addition of the net would charge it with destroying violence. But the H'vani worked like men who knew what they were doing. Obviously they meant to let the little pleasure-world circle on around Ericon until it floated above the target they had marked. That target would almost certainly be the Imperial City itself. And before avenging ships could blast Cyrille from its course, the city and half the countryside could be wiped out if this weapon had any real power.

Could she stop the destroyers first? It looked hopeless. From this angle she could see only a great panoramic curve of hill and forest below, partly obscured by a rolling thunderstorm. That dim light might be morning or evening; they could be ten minutes from the city or a full turn of the planet. And she had no idea which way the control room lay from here. Even if she knew, the door that shut her in was locked.

Wait, though. She had one weapon, if Egide had not found it. Hopefully Juille groped in her helmet lining. A hard handle met her fingers, and her spirits rose on a swift curve to something almost like hope. She laughed aloud and pulled out the little gun. There it lay, fitting her hand as it once had fitted the hands of a race whose very name no longer had meaning in the Galaxy they once had ruled. It might yet save the race that ruled today, if luck was with Juille.

Slim, flexible barrel with its spiral of silver tubing, bell-shaped muzzle, trigger curved like a tiny sickle— What would happen when she pulled it? Most likely—nothing, unless just possibly the Andareans had made use of the weapons on that rack within recent years. Lightning might come blasting out when she touched the trigger, or the gun might explode in her hand, on—

Juille set her finger on the trigger, clenched her teeth and turned the bell-

muzzle toward the lapping sea. Slowly she tightened her finger.

She pressed it back to the guard, and nothing happened. Nothing? She had time for one wave of sickening disappointment, and then thought she felt life against her palm. The gun was quivering. The quiver ran up the coil of tubing and shook against her fist, and a tiny glow seemed to be forming about the bell-shaped orifice. A glow that spun and spun. Juille stood holding the gun out at arm's length, while the glow grew brighter and faster, and the spinning increased.

Then a globe of luminous fire drifted from the bell-muzzle. It spun brilliantly like a tiny sun, moving away from her at leisurely speed and expanding as it moved. Straight out to sea it went, and the ripples mirrored its broken reflection on their surface. Juille held her breath.

There was a moment more of silence, while the waves lapped softly on the beach and the willows whispered and distant voices laughed. Then the spinning sun in midair flared out in one expanding flash and one tremendous hissing roar, like fire in water. The flash was golden.

When Juille could see again what she saw looked unbelievable even in the face of knowledge. Hanging in what seemed like open air above the still-rippling ocean was a circle of twisted girders, black and peacock blue from the heat of their destruction. Through the wall she could see a stretch of dim corridor. Plaster fell crumbling between the beams. And all around the edge of the opening a strange little dazzle of dancing colored motes faded slowly. The revolving sun had vanished.

Except for that hole in the air, everything remained unchanged about her. And though that hole was the only touch of reality in all this small world, it was fantastic as it hung there over the serene ocean rolling in from illusory distances.

She waded out through the warm blue ripples. Even when the shattered wall was within arm's length and she could see the transparent glimmer of her own reflection swimming above the wavelets in the reflecting wall, she had a feeling of instability as she set one knee upon a girder that hung unsupported on the air.

Beyond the opening lay a narrow corridor running left and right, lighted only by a dim thread of luminous paint down the center of the floor. Which way? What next? She had no idea even of how many charges remained in her weapon. Perhaps none. Perhaps only two or three. What she must do was find Egide as soon as possible and somehow manage to see him first, just long enough to focus him in the cross-hairs of the lenses which still hung about her neck.

She thought she had shut her mind to Egide now. He must remain only an enemy to kill if necessary, to capture if possible on the invisible leash of her strange lensed weapon. Until she held his life a forfeit in the lens all else must wait. And Jair—well, she must deal with him as opportunity arose. Without quite understanding it, she had a feeling that Jair was less of a danger than Egide.

She turned at random to the right, following the luminous line warily. At the end of the corridor she came out into the office with the black glass desk which she had first seen in the communicator panel. The dead man still sprawled across the glass. Juille, struck by a sudden hopeful thought, began jerking open drawers of translucent opal plastic. Papers—files of colored cards—a bottle of green brandy. A manicure kit. And—ah! A little palm gun with an extra clip of charges!

Juille laughed exultantly. This was for Jair! The bell-mouthed pistol might never fire again; the lens at her throat was a one-shot weapon. But this find put her on an equal footing with the two H'vani.

There was a large communicator panel on the wall behind the dead man. One of the labeled buttons below it said, "Control Room." Juille thought to her-

self, "I'm not afraid of you now," and pushed the button, watching the panel glow and the great central room take shape beyond it.

Egide and Jair had finished their work. The searchlight was like a long-legged bird with its big eye craning downward through the window that opened upon Ericon. The trap was set. The Imperial City somewhere on the face of the globe below was rolling slowly upward toward its doom.

Egide at the moment was talking into a tiny portable communicator which he certainly had not worn when he landed upon Ericon that day. Reporting—success?—to some H'vani base. Perhaps summoning some armada of invading ships to follow the path of destruction he was about to launch upon the Imperial City. Juille wasted no fruitless speculation on that. She put her face close to the communicator and called:

"Egide! Egide, look up!"

She could hear her own voice echoing hollowly from the walls of the huge room beyond the panel. Egide stared about for several seconds before he located the connected panel. At that distance, though she could see his face change, she was not sure what emotions showed there for a moment. He shouted, "Where are you?" and the echoes rolled back from the high walls.

"Come and find me," she called derisively, and waved her unbound hands in the panel to show that she was free. Before he could answer she pressed the disconnector. Then she counted to ten and pushed the same button again, looking down with a grin into the big room. A struggle of sorts was taking place there. Egide, dropping his private communicator, had evidently made a lunge toward the master control panel to locate the screen she had just used. Jair held him by the cloak and they were disputing fiercely. Juille scowled. Evidently the big red man did not trust his prince with this dangerous captive. But it was no part of her plan to have Jair come hunting her. She listened to the indistinguishable deep murmur of their argument. Then Egide gave a savage shrug and turned back to the window. Jair's white grin split the dark-red beard, visible even from here. She saw him give his belt a hitch, draw his gun and lumber purposefully away, his enormous shoulders swaggering a little.

Juille made an insulting noise into the panel. The two men glanced up, startled. She waved again, even more insultingly, and disconnected the panel. Well, no help for it now. She must find the Control Room herself, and do it quickly, and she must play hide and seek with Jair through the strange interior of Cyrille while she hunted it. Luck decidedly was not with her. But she was well armed now, and the element of surprise was in her favor.

The first thing to do was to get as far as possible from this room before Jair arrived. And since he might come by some swift intramural means she did not know of, she had better go quickly. It was eminently satisfying to feel the weight of a gun in each hand as she turned to the opposite wall—even though one gun might be empty, or very nearly empty. The feel of it alone sent her spirits soaring. The odds were fairly even after all, for she did not think Jair could know much more about Cyrille's inner workings than she did, nor could he guess that his quarry was as well armed as he. She had no illusions about Jair's purpose. He would certainly shoot on sight. No need any longer to hold her for a hostage, with that deadly mechanism in the Control Room already trained upon Ericon. Jair would shoot without warning, but he could not know that she would, and that gave her a little advantage.

Outside the office a wide, shallow, moving ramp carried Juille down to a hall and an empty foyer with arched doors all around its wall. She glanced about nervously. This was no place for her. Her spurs rang faintly as she ran across the floor and dodged under the

nearest arch. Another hallway, curving to the left. For all she knew she might be running straight into Jair's arms. She opened the first door she came to, glanced inside, and then sprinted through a field of waving lilies, knee-high, leaped a chuckling stream, tore open the door of a thatched cottage and found herself in another dim hall lighted by a luminous floor-strip.

The next random door led her into an arcade above a frozen twilight sea, with gusts of snow blowing through the open arches. Her breath went pluming frostily over one shoulder as she ran. Another hallway. An orchard that showered pink-scented blossoms upon her and housed one startled rabbit. It lolloped ahead in a frenzy, dodging off to the side just before she came to a gate in the orchard wall that let out onto the usual hallway.

She lost all sense of direction and ran as haphazardly as the rabbit had done, through a confusion of smallish rooms filled with every conceivable scene and climate. In several that she passed time had stopped. Clouds hung motionless in illusory skies, scenes reflected upon the walls were motionless, too, and lost all power to deceive. No water stirred and the air was windless. But most of the rooms she ran through were functioning still, and she passed a medley of mornings and noons and nights dwelling upon a wide variety of tiny worlds.

So closely is the human mind bound by the revolutions of its planet that after a while she found she had lost her time-sense as well, and could not help feeling that the hours had telescoped together in a dream as she ran, that this should be tomorrow, or even the day after that. Egide's playful device upon the cloud for making the days go by had turned to convincing reality here. She had been through too many nights and mornings for the present to remain today. She had even passed too many winters and blossomy springs for her own mental comfort, and though her reasoning consciousness derided the feeling, it lurked uneasily just below the surface and darkened her subconscious thoughts as she ran on.

But the time came when she tired of running. She must have come far enough by now that Jair would not be likely to trace her from the office where she had called. As a matter of fact, Cyrille was so large and so intricately honeycombed with rooms that it would be quite possible for them to wander about for hours, or even days, without meeting. And Juille was of no mind for such a flight as that. She had little time to waste. Every moment that passed now carried Cyrille closer to its target.

The Control Room, then, was her real goal. Jair might or might not find her soon, but if she failed to find Egide and the controls and the enigmatic weapon angling downward toward Ericon, it would not matter much what came after. And she might wander for hours through these circling rooms without reaching Egide.

Juille scowled thoughtfully and hefted the bell-muzzled pistol in her hand. There might be one more charge in it, or a limitless number, or none at all. But this was no time for conversation, not when the very minutes of life left to the Imperial City might be ticking off to nothing.

She was standing in a corridor at the moment. After a second's hesitation she pointed the bell toward the light-striped floor and pulled the trigger. The gun shivered. A glow gathered again within the bell mouth, gathered and spun and grew. The tiny sun came whirling from its socket, drifted floorward, struck with the hiss of fire in water. When Juille's sight came back after that golden glare, she saw blued girders again, and again the little storm of dancing colored notes which marked the edges of the gap. They flew up in her face this time as she leaned over the hole, stung her briefly and went out.

Below was a dim-green twilight forest of wavering weeds. Not too far below. Juille took a tight grip on both her guns

and jumped. She was in midair before she saw the terrible pale face peering up at her through the reeds, its dark mouth squared in a perfectly silent scream.

It was a madman's face.

Juille's throat closed up and her heart contracted to a cold stop as she met that mindless glare. She was falling as if in a nightmare, with leisurely slowness, through air like green water that darkened as she sank. And the face swam upward toward her among the swaying weeds, its mouth opening and closing with voiceless cries.

The floor was much farther than it had seemed, but her slow fall discounted the height. And the creature came toward her as slowly, undulating with boneless ease among the weeds. Juille sank helpless through wavering green currents, struggling in vain to push against the empty air and lever herself away. The room was a submarine illusion of retarded motion and subdued gravity, and the dweller in it, swimming forward with practiced ease against the leverage of the tangled weeds, had a mad underwater face whose human attributes were curiously overlaid with the attributes of the reptile.

Juille's reason told her that she had stumbled into one of the darker levels of Cyrille, where perversions as exotic as the mind can conceive are bought and practiced to the point of dementia and beyond. This undulating reptilian horror must be one of the hopeless addicts, wealthy enough to indulge his madness even when civilization was crumbling outside the walls of Cyrille.

There was no sound here. Juille's feet came down noiselessly upon the sand, scarcely printing it with her weightless contact. The thing with the mouthing inhuman face came writhing toward her through the blue-green shadows and the swaying of the reeds. She felt her own throat stretching with a scream, but the silence of underwater rippled unbroken around her. For one sickening moment she stood there swaying on tiptoe, scarcely touching the sandy floor, staring at the oncoming madman while her lips opened and closed like his and no sounds came forth. The illusion of fishes in a submarine cavern was complete.

Then she saw a door between two marble pillars that wavered as if behind veils of shifting sea water, and wheeled unsteadily toward it, moving with nightmare slowness over the ripple-patterned sand unmarked by footprints. Behind her the thing came gliding—

As Juille struggled forward she had to force herself against every instinct to draw each breath. The illusion was so perfect that she could not help expecting strangling floods of bitter water to fill her lungs. Her garments wavered up around her and the helmet tugged at its chin strap.

The door was locked. Automatically she burned out the bolt with her palm gun, too sick with utter revulsion to notice, except dimly, that its characteristic thin shriek of riven air was silent here, too. But when the jolt of the gun against her hand responded and the door swung open, reason returned to her. She was armed. She need not fear this hideous writhing thing that swam after her with clutching webby hands outstretched.

She gave one last strong lurch against the weightless gravity of the room and stumbled out into the corridor, where normal gravity for a moment seemed to jerk her down against the floor. Stumbling, she regained her balance and then swung up the gun and sent a thinly screaming bolt back into the green dimness of the submarine room where the creature that mouthed its soundless screams was floating after her. The gun bolt struck him in the chest and its impact sent him wavering backward through the watery air. She saw him double with the strong, convulsive arc of a fighting fish. He began to sink slowly floorward through the reeds, but like the reptile he aped, he was slow to die.

Holding her gun ready for a second shot, Juille backed away. And slowly the madman swam toward her, one clawed hand pressing to his chest where the bolt had gone through. He moved with hideous, inhuman grace until he reached the threshold. Then gravity slammed him flat upon the floor and he lay there gasping and heaving himself up like a fish out of water. The normal pull of Cyrille was more than he could fight against. Juille pressed against the wall and watched him die.

She was badly shaken. Common danger was an old story to her, but the dark, contaminating psychic horrors which she thought she stood among now were a menace she had no armor against. She glanced about the corridor, reluctant to move lest she intrude upon another of the small private hells which, she knew now, fully justified the evil reputation of Cyrille's hidden levels.

And yet she must move. There was no time to waste now. She set her teeth resolutely and leveled her bell-mouthed gun at random toward an angle of the wall and floor. With luck it should open up two avenues of escape, and if one proved untenable, the other might do.

The gun quivered in her hand; its spinning sun gathered and floated free. And she was not sure if her imagination alone made the glow of it look duller than before. Was the precious charge running low? She wondered for one panic-stricken moment if she would have to defend herself now with the little palm gun alone, and then the sun bullet struck with its golden flare and hissing, and she had no more time for wonder.

Low in the wall a broken opening showed when the glare died away. Through it Juille had an incredulous glimpse of a city spread out in sprawling avenues and parks between the ridges of rolling hills. She saw people moving like tiny animated dots through the streets—all of it either in incredibly perfect miniature or incredibly far away. Then a cloud of saffron smoke came

rolling through the gap and billowed up into her face. She caught one whiff of its exotic, spicy fragrance and then pulled her short cloak over her face and dived precipitously through the other gap in the flooring, without looking where she dived. For she knew that smoke. She had no desire to go mad in any of the delirious ways its spicy odor offered.

She struck the floor below and rolled for a moment in a bank of pale-pink snow that tingled instead of chilling. More snow drifted from low clouds, blinding her when she looked up. Veils of it, dancing rosily about her, hid the rest of the room. A wind blew, and the veils spun and writhed together in serpentine columns, through which she saw

just a glimpse of motion before the wind died again. All the room was pink and dancing with warm snow, and through it a hideous low laughter quietly shook the air.

Juille scrambled to her feet, her heart thudding madly. Snow blinded her, but her ears gave the warning her eyes could not, and she was sure she heard footsteps shuffling nearer through the silence and the blowing veils. The laughter came again, low, satisfied, evil as she had never imagined laughter could be.

Until she felt the quiver of the bell-mouthed gun in her hand she did not know she had pulled its trigger. There was a paralyzing quality about that voice. The whirling sun drifted from the muzzle, vanished briefly through clouds of pink snow, then struck somewhere invisibly with its hiss and its golden flash. The voice chuckled, fell almost silent, then chuckled again, nearer. And Juille plunged wildly away from it, her feet slipping upon the snow.

Light pouring through a gap in the wall made the dancing flakes glitter with all their rainbow facets. But it was a very thin beam. When Juille had groped her way to the source of it, watching across one shoulder and holding her breath as she listened for the laughter in the snow to follow, she found a breach barely large enough to squirm through. The gun was certainly losing its strength.

It took all Juille's courage to force herself through the gap. Only her glimpse of a calm, sunlit meadow beyond made her try; that and the sound of a low, evil chuckle somewhere beyond the swirling veils. For to squeeze through the wall meant rendering herself helpless during the passage, and what might happen while she struggled there she could not and dared not think aloud.

But, somehow, she made the meadow unharmed. And then stood gripping her two guns and looking back sheepishly at the ragged gap through which pink snow whirled now and again. She heard no further echo of the terrible, soft, satisfied mirth. But her self-confidence was very seriously disturbed now. It annoyed her to find her hands shaking and the thumping of her heart refusing to slow even though she stood alone in an empty, static meadow in some little world whose functions had ceased.

Turning over rather panicky thoughts in her mind, she crossed to a gate at the far side, keeping her attention alert for any following thing from the broken wall. She had hoped to blast her way somehow through to the Control Room and destroy the great searchlight there with the aid of the bell-muzzled gun. But she knew now that would be impossible. Each charge might be the last, and each lessened in effectiveness. She wished passionately for the lightning gun Jair might be carrying. She wished even more passionately for human company, even Jair's. And she began rather shakily to fit the two desires together.

Supposing she lured Jair within range of her palm gun. Could she force him to give up the lightning caster or to guide her back with him to the Control Room? Certainly she could try. Even if the plan failed, she would be no worse off than now, for at very worst she could surely kill him before he killed her. And incongruously, she found herself longing for the presence of his impressive human bulk, the vibration of his voice. Even though he meant to kill her, and she him. He was so reassuringly human, after these horrible inhuman travesties in their madhouses.

So she went out the gate and into a corridor, and she followed the corridor to the office at its end. And closed and locked the door after her, between herself and any sound of laughter that might follow from the room of the pink storming snow.

This office was almost a duplicate of the other. A desk of deep-blue glass this time, and with no dead man behind it. But the wall behind the desk had the same array of communicator panels. She

went straight across to it and pressed the universal broadcast button.

"Jair," she said clearly. "Jair, do you hear me? I'm in"—she glanced at the board—"Office No. 20 on the Fifth Level. I'll wait here until you come. Please hurry."

The thought of her own voice echoing among all the corridors and the strange myriad worlds of Cyrille made her shiver a little. Even Egide would hear it, where he worked out Ericon's destruction in the Control Room. And somewhere in the honeycomb of apartments and corridors Jair would hear it, too. He might already be very near. He would put his own interpretation on the appeal, for he must think her unarmed.

There was not much hope for an ambush here. Cyrille was not a world that offered materials for building gunproof barricades. She pulled a screen patterned in swimming colors across one corner of the room and waited behind it, watching the two doorways that opened in the far wall. She had her guns ready. The whole world was silent about her, and the moments dragged interminably.

She heard Jair approaching before he entered the room. He made no attempt to come quietly, and his heavy boots woke echoes along the corridor. Very obviously he thought her unarmed.

He paused in the doorway, big and red-bearded, his red-brown eyes frankly murderous in a cold, dispassionate sort of way as he glared about the room, gun lifted and ready. Juille saw that it was the lightning gun, and her heart jumped. She had to have it. But she saw in her first glance that he had no intention of speaking a single word before he killed her. She might not have been of the same species as he at all, so matter-of-factly did he scan the room for his quarry.

Juille had not expected quite this workmanlike preparedness. She had imagined some interval in which she could address him from behind her shelter and offer a bargain. But she felt that her first word now would serve only as the target for his shot. Still, it had to be done. Perhaps if he knew she was armed—

She said in a clear, firm voice, "I have a gun—"

Jair's lightning thrower leaped up. His fierce eyes raked the room, not quite sure where the voice had come from. He did not believe what she had said, or he did not care. Obviously he hesitated only long enough to know where to fire.

Sighing, Juille fired at him around the edge of the screen, her needle beam making the air shriek as it passed. She had meant to pierce him through the shoulder, but he was inhumanly quick. He must have jumped even before she pressed the stud, because the screaming beam only seared him across the arm and died away in a thin, high wail and a splatter of blue heat against the wall behind him.

Jair laughed, a cold, satisfied sound that partook a little of the terrible laughter in the snow room, and seemed to throw his gun and a thunderbolt at her in one incredibly quick overhand motion. But the shock of his burn must have confused him, spoiling his judgment if not his aim. The bolt went rocketing over Juille's head where she crouched as nearly flat upon the floor as she could in a poise for flight.

The painted screen disintegrated in a rain of colored flinders around her. Those that touched her burned, but she scarcely feel it. Both she and Jair were stunned by the violence of the bolt as it crashed through the wall in a blinding, blue-white glare, leaving behind it a moderate thunderclap and a smell of ozone.

After a second, Juille's mind cleared and she heard Jair's bull-like roar deep in his throat, saw his finger tighten again on the trigger. She faced him over the ruins of the screen, not daring to wait for another shot at him. He was too

quick, and a second thunderbolt might strike her squarely.

She was whirling as the room still shook with thunder. Of its own accord her hand closed on a fragment of weighted plastic from the screen and she flung it at Jair, seeing it splinter against his forehead. Then she had spun away toward the shattered wall, moving more quickly than she had ever moved in her life before.

She cleared the wall with one flying leap, grateful in a flash of remembrance to Helia's relentless training over years and years, that had built muscles and reflexes to hair-trigger response. How very strange it was that Helia had trained her thus, so that she might escape the weapon which Helia herself had put into the hands of her enemies.

The thunderbolt had made havoc through a series of rooms before it came to a gap too wide to leap. If Cyrille's materials had not been almost uniformly fireproof, she might never have lived to run even as far as this. But she knew she must dodge behind some other ambush and shoot Jair from behind where he could not be forewarned by the sight of her motion. His reflexes were even quicker than her own. Luckily the bolt had leaped haphazardly, not in one straight path, or Juille's flight must have been halted before she finished her second stride.

Arch upon shattered, tottering arch opened up before her through rooms of sunlit fields whose light spilled over into rooms of twilight. At the far end she could see an angle of a room full of branches and terrified birds. She ran smoothly, dodging, taking advantage of every broken wall. If Jair was behind her, he came silently. She dared not glance back to see.

When Juille came to the room of branches it seemed to have no floor, only leaves and vines and more branches below at various levels leading down to sunny, bottomless space. But some of the birds lay dead in midair, and she guessed the presence of a glass floor and went skating precariously over nothingness toward the gap in the far wall. Birds beat hysterically about her head, screaming protest and alarm.

In the last room, but one which the bolt had wrecked, she dropped behind a ledge of green ice, on a floor of strange green moss, and waited with steady gun. This time she did not hear Jair coming. He went silently past her a dozen feet away, moving with smooth, deadly speed. Juille took careful aim and her finger tightened upon the stud.

Jair's quickness was inhuman. His senses must have risen to razor-keenness under such stress as this, for something warned him in the instant before Juille fired. Some tension in the air, some awareness of her breathing or sight of the motion she made vaguely reflected in the crystal walls of the room. He flung himself flat upon the moss and the needle beam shrieked over his head and flattened to blue heat in midair upon some invisible wall. He fired from the floor, grinning up at Juille with a singular cold detachment that fascinated her. Then the leaping bolt dazzled her eyes. Fantastic luck was still with her.

Because he fired from such an angle, he missed by a very brief margin. Juille felt the searing heat of its passage and heard it go crashing through walls again, somewhere behind her. The concussion shook them heavily again, and low thunder rolled and echoed through the opened rooms.

Juille spun around. Beyond the broken wall was dimness. Dimness to shoot from—an ambush at last. She reached the opening in three flying strides, a split second before Jair could scramble to his feet. She knew vaguely that he was lunging after her, almost upon her heels, as she vaulted the gap into dimness. But she knew very little else with any degree of clarity for some seconds.

For she landed not upon a level floor, but on a rubbery, cushioned surface that swooped into life as she touched it.

Inertia flattened her to the cushions as it rocketed toward the ceiling in a long, smooth glide. Behind her she heard Jair's startled bellow trailing out and away as something unexpected happened to him. For a few moments she could see nothing.

Then violet light dawned slowly about her and she was gliding swiftly down a long mirrored slope between trees like great nodding plumes, white in the purple dimness. The slopes were deep-violet and all the pale trees stood upon their own reflections.

Juille was sitting in a cushioned boat with a harp-shaped prow. And it was sliding faster and faster, down and down, while the plumy trees blurred together and a great crashing chord of music paralleled her flight. Far off through the trees she saw motion—red beard, a streaming cloak. Too dazed to realize what had happened, she was not yet too dazed to recognize Jair, and she sent a random beam screaming at him through the trees. He bellowed a distant, echoing challenge.

By the time its resounding chords had died away a little, and her boat carried her around a wide swinging curve under the trees, she thought she knew what was happening. They had stumbled, somehow, into one of the game rooms of Cyrille. Jair's last lightning bolt must have opened a wall directly above a waiting line of cars, and the two of them were swooping now, very fast, through the opening measures of some one of the elaborate competitive entertainments of Cyrille.

Unexpectedly the familiar despairing wail of a needle beam screamed overhead and spattered blue-violet in the dimness upon an unseen wall behind her. Juille ducked instinctively and heard Jair's diminishing shout as he was carried past along a curve beyond the nodding trees. Obviously he was afraid to use the lightning bolts here. If he wrecked the invisible track, he might come to grief himself before he could escape from his flying boat.

Juille craned about her in the sleepy twilight. The trees nodded with soporific soothing motion; the cushioned boat swept on up a swift incline to the music of an invisible orchestra. Again the screams of a gun beam split the music, searing the cushions before her. Scorched rubber tainted the air. She twisted in time to see the other boat go swooping away through the trees in a long, smooth dive, and hurled a whining beam in pursuit. Jair yelled derisively.

The music swelled and sank. The boats swung gracefully around tree-shadowed curves, under feathery plumes that brushed the cheek. The mirrored slopes reflected everything in violet distances underfoot, like still water. And above and below the music Jair and Juille exchanged random shots that missed in blue-spattering fountains or seared the cushions of one boat or the other, but because of their speed, somehow never quite struck the occupants. Several times severed tree trunks came down in avalanches of white plumes.

But presently the light began to glow with a rosy brightening, and Juille realized that a second phase of the entertainment was about to begin. What it would be she did not know, but since this was very likely a competitive game, it would no doubt involve a clearer light and a more open field for some kind of maneuvers in the gliding boats. She imagined the music that kept pace with the speed of her flight had some connection with the harp on the prow of each boat. Was it some sort of musical competition as well? She remembered Egide in the underground arsenal, shouting until the weapons all replied, and for an unexpected moment she was appalled by a melting warmth at the memory. She had an irresistible vision of the young H'vani riding in a boat like this with his yellow hair streaming, leaning forward to strike music from the harp and shouting out the stanzas of some ballad in reply to the distant, shouting song from other boats, and the wild chords of the harps.

She turned her mind grimly away from that, wondering if anyone who had ridden this track before could have imagined the deadly stakes for which she played today. And she knew she dared not play it through. In the light and the open, Jair would have the advantage. Those lightning bolts would probably not miss a third time.

But one advantage she did have. She had entered the game first. She remembered enough of the contests to know that they usually involved an elaborate crossing and recrossing of paths, woven in and out like a Maypole dance. It was not impossible that Jair's boat, while not following exactly the path of her own, did cross it now and then in her wake. If she could wreck the track—

Leaning over the back of the swiftly gliding boat, she pointed her bell-mouthed gun at the floor and pulled the trigger. While she waited for the whirling sun to form she speculated as to what would happen if she herself were carried over the resulting chasm first.

Something was wrong. The gun was shivering in her hand like some living creature forced beyond its strength. But no glow gathered. Juille shook it in some faint hope of utilizing the last of whatever charge it used. But the shivering itself began to slacken in a moment or two, and then the little weapon from the nameless past lay dead in her hand. She looked at it regretfully. Well, now she would have to take the lightning gun from Jair or give up all hope of reaching the Control Room even in time to take vengeance. After an instant's hesitation she gripped her palm gun tightly and slipped over the side of the boat.

This was a slow place, mounting the rise of a mirrored hill. She skidded a moment or two on the uncertain flooring and then caught herself and watched the boat go sliding on down a slope to waves of diminishing music. Juille dived into the shelter of a great feathery tree that overhung the path. Violet twilight closed about her. She stood in a bower of shivering white plumes, exquisitely delicate, wavering upon the air so that her very breath stirred them into slight motion all around. She could trace the departure of her boat by the quivering plumes in its wake.

The music sank and swelled again. She spent an interminable five minutes thinking she had guessed wrong, and wondering wildly how she could ever hope to escape now, without her bell gun to blast a way through the floor. And then upon a rising tide of music she saw a boat come gliding by, parting the trailing plumes. Jair leaned forward over the prow, his red-brown eyes raking the twilight with quick, comprehensive glances. He was almost machine-like in the cold efficiency that lay like a hard foundation beneath the warmth and the dominant, overwhelming masculinity of him.

But he did not see Juille. This time she was hidden. This time she could not fail.

She raised her gun, took steady aim, and shot him through the stomach.

The beam's high wail still shook the scorched and plumy branches around her as she leaped for the stern of the sliding boat. It was picking up speed again. Jair had doubled forward without a sound, both big hands clutching at the wound. His lightning gun thudded softly to the car's cushioned floor. The air smelled of burned flesh and burned feathers. He did not move as she leaned over the moving side and snatched up the gun. It was all over in the flash of a moment.

Then she dropped off the padded gunwale as the boat gathered more speed. She stood watching it go, sliding faster and faster to the beat of rising music, swooping away over the violent reflections of the floor while the white trees foamed in its wake.

The gun was still warm from Jair's hand. After a moment of quiet staring as the boat and the dying man vanished, Juille drew a long breath and pointing

the lightning gun at random, pulled its trigger.

Thunder and lightning—the crash of the bolt against some hidden wall, then booming echoes that rolled and rolled again. Plumed trees convulsed violently away from that path of destruction, delicate fronds tearing free so that the air was filled with a storm of feathery snow. Through their drifting, Juille could see only confusedly what had happened. In the wake of the thunderclap, and tinkling between its echoes, she heard shattered crystal showering from some ruined wall.

Setting her lips, she turned the gun in the opposite direction and loosed a second bolt. There was a sort of intoxication in the feeling of sheer destruction as she heard the lightning smash and another wall come sliding down in musically tinkling fragments. Echo piled upon echo through the boiling snow of feather fronds. Again and again and again, in diminishing distances, she heard the bolt strike and leap and strike again, wall beyond wall, until it found a gap too wide to bridge. The thunder rolled away and rolled again long after the crashes ceased, and the air was heady with ozone. The whole forest was lashing itself to fragments now, and the storm of feathery snow had become almost too thick to breathe.

Holding her cloak over her face, Juille tilted the gun down and loosed a bolt at the floor some distance ahead. Destruction was her only goal now. Jair had fired recklessly, in the hope of killing her, but he had not shared this utter recklessness of Juille's. She knew she could not find the Control Room except by chance, but the lightning bolts she was loosing must sooner or later crash through the floors into the room where Egide stood waiting by the window that looked down upon Ericon.

Whether the Imperial City still stood she could not guess. Perhaps not. She did not know how much time had passed since her escape from the first room, or how near Cyrille had been then to the city. At best she might still save it; at worst she would have revenge. For if she missed the Control Room, she must eventually pierce the outer walls of Cyrille and let free the air that kept them both alive. And she would do it if she had to demolish the whole pleasure world, room by room.

A fan of bright sunlight glowed upward through the wrecked floor. Like the pink snow in that room of terrible laughter, the feathery snow of this one turned and twisted like great motes in its beam. Juille skipped back in alarm as the floor before her collapsed with a great sliding crash into the gap. Dust billowed up into the sun rays.

When the sliding had ceased, Juille saw a network of beams that looked fairly steady, and made a precarious descent to the floor below through the choking dust and the swirls of feathers. The air still shook to thunderous echos and the distant crashes as her lightning bolt went leaping on, far away.

Here was another jumble of ruined rooms opening upon one another, mingling the components of their worlds into one insane potpourri of incongruities. Strong sunlight from a wrecked daisy field stretched fingers of illumination into the fragments of a spring night sparkling with stars. A burst of feather snow from above blew past on some sudden draft and swirled over the daisies and through the broken wall above them into a stretch of desert that lifted blue peaks against the sky miles upon miles away.

Juille looked about upon the chaos she had wrought and laughed aloud with something of a god's intoxication in the sound. She felt like a god indeed, hurling the thunderbolts, wrecking the helpless worlds about her. She drilled a fresh path of destruction through the nearest wall, reeling a little with the concussion of the blow, and then breathed the ozone deeply and felt her head spin with its stimulation.

Through the wrecked wall in the wake of the lightning and thunder a gust of sudden rain came beating, and the sound

of distant surf breaking upon rocks, and a swirl of leaves from some exotic purple tree. Juille climbed through the gap and watched her bolt leaping three rooms away across a jungle glade to crash with redoubled violence into a twilight scene where pink boats drifted. Beyond it some scarcely visible new world opened up, a place of darkness and blazing orange suns whirling in a black sky.

Something cold lapped about Juille's ankles. She looked down at a stream that appeared to have sprung to sudden existence from empty air between the column of a golden autumn wood. It gushed harder as she looked, broke away more of the wall upon which the autumn trees were reflected, and became a minor torrent in the course of a few seconds.

Remembering the many water scenes of Cyrille, Juille took alarm. There must be great reservoirs of it somewhere here. She had no wish to release it all at once, to overwhelm her before her work was done. She cast another lightning bolt at the floor in the torrent's path, staggered from the concussions and watched the broadening stream plunge downward in the wake of thunderous echoes to create new havoc beneath.

Then she clambered over ruins and hurled a new bolt before her to blast a path through the worlds. Where was Egide? Which way did the Control Room lie? Echoes piled upon echoes as she blazed her way along. Ozone mingled with the heavy fragrances of tropic flowers and autumn leaves burning, and nameless, unknown odors from the opening rooms.

There was something truly godlike about such destruction as she was wreaking. This was more than human havoc. As she went striding and destroying from room to room she left ruin in her wake that could not have been paralleled since God first created the Galaxy out of similar chaos. All the ingredients of creation were here, tossed together in utter confusion. And if her race was doomed, if it never ruled the stars again, then she was creating here in miniature all the havoc her race would leave behind it when it fell. World by tiny world she returned them to the original melee from which God had assembled them, but there would be no gods to come after her and build them up again.

She was glad that she came upon none of the scenes she might have remembered from her few days here with Egide, in the lost times of peace. Subconsciously she kept watch for that vast central room of the floating platforms and the great tree, where they had met. And once she came to an opening that might once have been that room, and stood on the brink of its great space, looking out. Lightning bolts had been here before her, and nothing coherent remained. The whole enormous space had evidently once been veiled with vast swinging curtains of gossamer, but they were in ribbons now and held startling bits of flotsam in their nets, as if some giant had been seining Chaos for the relics of ruined worlds.

Methodically she went on with her labor of hurling the thunderbolts.

Cyrille was builded well. The little worlds collapsed into one another and the walls and floors collapsed, but the small planet itself held surprisingly long. But eventually, as Juille paused to look down a long newly-opened vista—like someone gazing godlike from the shore of the river of time, looking across the eras into many parallel worlds—she saw something amazing happen.

Far away, tiny in the distance at the end of the lightning-riven chain, trees and walls and shattered buildings began with stately precision to collapse. An invisible hand seemed to be sweeping toward her along the newly created corridor of the worlds, crushing them to the floor in leisurely successions. Juille had a moment's insane impression that by the hurling of the thunderbolts she had made herself a god—that the world bowed down before her.

She stood amazed, watching the long sets fold slowly to the ground, nearing

and nearing, until— A giant palm smashed her to the floor. She was no god now, but a puppet in the grip of a monstrous gravity that was making the very floor sag beneath her incredible weight.

It passed on and she got up shakily, full of a grim exultance even in the face of this terrible threat. Cyrille was breaking up. The gravity machines had been damaged. And that—she laughed aloud—must mean that one of her random bolts had reached the Control Room at last. From now on, anything might happen. She thought with chilly amusement of Egide's surprise. He must think Jair was being very careless indeed with the Andarean lightning. Perhaps he might come to investigate. Perhaps he might! She warmed at the thought. She had no idea along which of the many corridors that her bolts had opened the Control Room lay, but Egide might follow the path that had broken in its wall and so find her. She began to watch for a human figure among the vistas.

But Cyrille was collapsing faster than she had thought. The faraway, hissing howl of air through punctured space walls had not yet begun to drain the planet of life, but some other force of destruction was loose among the worlds now. She felt the roar before she heard it, a thunderous shaking of the air that swelled and swelled into a stunning juggernaut of sound. The floor tilted, sending her reeling against a wall through whose breach bright-scaled branches hung. They clutched at her feebly, with a malignant reptilian life. But she scarcely noticed. The roaring grew so vast that its own weight seemed to turn Cyrille off balance as it neared. She heard a series of tremendous avalanching crashes beyond the walls.

Then a solid stream of green water burst through the wall she leaned on, and crashed against the opposite barrier, brimming the room waist high in a split second. Juille went whirling helplessly into the vortex boiling at its center. But before she had gulped more than a searing lungful of the water a screaming uproar filled the room as it dropped away again around her. She leaned gasping against the wall while the sudden torrent drained away through a hole in the flooring. The last of it vanished with a gurgling, shrieking scream that sounded nearly human.

Gravity shifted madly while the sound still echoed. Juille found herself shooting up diagonally toward a corner of the ceiling which had suddenly become the floor. An utter hodgepodge of her self-created chaos fell with her. Before she could adjust her balance on the angular floor, it tipped anew and amid floating debris she drifted down again. Far off the roaring of the released torrent diminished among the echoing rooms, but the floor still vibrated from its thunder. Obviously the water supplies had burst their reservoirs at last and were crashing through Cyrille, flattening everything in their path.

If she had created chaos before, there was no word to describe this.

Gravity tilted again, to send her reeling down a steep incline of inter-opening rooms. Warm rain beat in her face, snow stung it. Air currents went screaming by, mingling the odors of a dozen ruined worlds. Then the floor retilted, so that the bottom of the slope she stumbled along was suddenly the top of a high hill, and she went scrambling and spinning away sidewise through a cold ice cavern that opened upon a swamp.

When Juille found herself looking up into Egide's face, she was not at all surprised. Creation had flown apart all around her; nothing would be surprising now. Everything in her brain was as hopelessly confused as the external confusion all about, and with the letting go of gravity, all sense of responsibility seemed to have let go, too. Far away, long ago, she knew she had been desperately worried about something. It was all right now. Nothing mattered. Nothing remained intact to matter. When natural laws suspend and reverse them-

selves, the mind tends to accept suspension as natural in itself.

Egide seemed to be carrying her. Everything bobbed curiously around them. He was carrying her doggedly through a snowstorm that changed to a gust of tiny frightened birds, white and pink and yellow, rushing by them shoulder high in a great beat of wings. And now they were flying, too, twisting over and over around each other in the midst of a twisting tornado of colored debris. Juille laughed weakly at the ludicrous feeling of weightlessness.

"Glad it amuses you," Egide told her savagely, trying in vain to right himself. "If this is your idea of suicide, go ahead. I'm leaving." He shoved her violently away and struck off awkwardly through midair, pushing a way ahead through the floating jetsam of the worlds, and holding on to the ceiling for leverage.

"Wait! Come back!" Juille floundered after him, knowing vaguely in the back of her mind that there had once been some urgent reason why he should not leave her. Nothing mattered now that had mattered before, but there was still that nagging remembrance.

"Stop following me!" Egide barked angrily, pushing a drifting boulder aside.

"Wait! Wait!" Juille wailed, and brushed the boulder from her way.

If they had been tensely staking their lives a few minutes before on the hope of killing each other, all memory of that had relaxed and floated away with the floating worlds. There was nothing ludicrous to either of them now in the futile anger of their voices. And if, in this utter suspension of all they had been thinking and believing, Egide fled from Juille as a danger and a menace, and if Juille struggled after him calling him to return, it may have meant nothing at all.

Juille had little recollection of what happened between that time and the time she found herself helping Egide, who resisted her irritably, to lever open a door in a slanting ceiling. They hoisted themselves through it with difficulty. Then Juille turned suddenly very sick as gravity reversed itself in midair and whirled the floor around underfoot, jerking the door handle from her grasp.

After a moment, everything righted itself. Juille found herself leaning on a cold, smooth wall of plastic, looking over a familiar room. Machinery filled it, and from the walls, hundreds of paneled screens looked down in seried rows. Many of them still functioned, mirroring insane pictures as world tumbled through world. Sounds howled down from their windows, hodgepodging together into a continuous ululating roar. And before her, a vast glass wall opened upon the red glow of fire.

That was Ericon down there.

Remembrance avalanched back upon her. And for a stunned moment, the sight she saw below meant nothing. She had looked too long upon ruin to be shocked by it now. Ericon stood up like a great green wall before her in the telescopic glass, its surface crisscrossed with a path of destruction. The Imperial City, like a toy relief map spread upright on the wall, sent great rolling plumes of smoke upward from its shattered buildings. She could see the wreckage of the Imperial patrol ships lying where they had fallen among the ruins. The futile flashes of gunfire from far below sparkled like fireflies in the dusk of the consuming smoke. But she could not quite force her mind to believe any of it. She had seen too much miniature destruction in the past few hours to accept this destruction, so far away, as real, full-sized, disastrous.

No, what sent a cold flooding of despair through her now was the sight of the great black shapes which were forging silently past the window in perfect formation, silhouettes against the pulsing red glow of Ericon beneath.

The great armada of the H'vani was driving in from space through the breaches of the devastated space defenses. They were coming in now—now, as she stood watching. This was something real. There was no parallel for this in the make-believe destruction

she had just wrought. She leaned against the wall and let her wide eyes absorb the sight of Ericon's ultimate ruin, unable to make her mind take hold upon anything but that.

So her futile adventures among the little worlds of Cyrille had been for nothing, then. Sometime while she had gone striding among them dealing thunderbolts, Cyrille had swung at last over the target Egide awaited. And he had loosed a real thunderbolt upon a real world. She could see the ravaged surface of it interlaced with broad molten tracks of ruin. Cyrille's traitorous work was done. Juille thought sickly of what must have happened down there when the unsuspected moon, which had circled Ericon for countless ages, suddenly began to pour death upon the city.

That silent armada could take over now. It would take over, against whatever resistance might be left in the stunned and ruined city below. Her father might be dead already. And without either of them to organize the shattered remnants of the empire, what hope did the Lyonese have? She tried to turn over in her mind the names of those who might succeed her, she tried to think how quickly the forces on the outlying planets of this system might be summoned in, but with the very heart of the empire lying in shambled ruins down there, it was hard to think at all.

Then her hand at her throat touched the outlines of that small lensed weapon which had been Dunnar's last gift to the Lyonese, and a faint hope began to struggle in her mind. If the Lyonese had lost their Imperial City and the services of herself as a leader, had not the H'vani lost their leaders, too? Jair, dead somewhere out in the raving chaos of Cyrille, and Egide here—Egide leaning against the window and looking down at the great armada that was pouring in upon Ericon.

Egide had crossed the still-intact floor of the Control Room while Juille stood stricken against the wall, gazing upon the ruin of her empire. Now he lifted his head and watched her without moving as she pulled out her lens upon its chain. She must have seemed to be looking in a mirror as she lifted the lens and tried vainly to steady it enough for her purpose. Certainly there was no overt threat in the action. He stared, not interfering, as she braced her elbows on a projecting bar and centered him in the thin cross-hairs of the weapon.

Then Juille drew a deep breath and pressed the white stud. Nothing happened. Nothing, of course, would happen until the other stud was pressed. But Juille felt oddly disappointed that her supreme purpose had been accomplished in this moment, with so little fanfare. It surprised her a bit that she had no emotional reaction now. Neither triumph nor regret, although Egide's life hung upon the pressure of a stud. No feeling seemed left in her at all.

She looked around vaguely, wondering just what to do next. Egide still stood before the window where the great black shapes of his armada passed in stately formation, silent, limned against the light of the burning city. All around them the howling from the ruined worlds of Cyrille still poured down from their screens upon the wall. Through the one ragged gap where Juille's lightning bolt had crashed came more confused roars and thunderings as the tides of water and the shifting gravities put a last touch of havoc on the work she had done. But here in the Control Room, gravity still prevailed, and so far the ruinous tides had not rolled this way. Very likely they soon would. And then there would be no survivors at all upon Cyrille.

Juille shook herself awake. One last faint hope remained with her, but even that must be fulfilled quickly. She held the lens up, her thumb upon the black stud that meant death.

"Egide," she called. "Egide, look here. Remember the weapon from Dunnar?"

He blinked. He had not recovered

quite as quickly as she from that curious relaxing of all human values which the shifting gravities induced. He had not had reason to recover so soon, as Juille did, at the shock of what lay below the window. He said:

"What do you mean? Dunnar?"

She flashed the lens impatiently at him. "This is the weapon. This, here! Do you understand me?" She saw that he did, for he reached abortively toward his holster. "No, don't move!" She cried it sharply above the noise from the walls. "I can press this stud before you shoot, and then—" She made a grim little gesture.

Egide hesitated. "That's not the weapon there."

"It's enough to kill you."

He furrowed his brow at her. "The real weapon—that must be down below, on Ericon." He glanced over his shoulder at the gliding armada and the flames of the burning city, and his hand moved a little nearer his gun.

"Don't do it!" Juille's voice was confident and commanding. "The real weapon's safe, even now. In a bomb-proof vault outside the city. We thought of everything, you see. Even this. I wouldn't risk it, Egide." She held the lens higher, so the red light from below caught brightly in it, and showed him her thumb already on the lethal stud. He hesitated a little even now.

Juille held her breath. She did not want to kill him yet. She was not sure she wanted to kill him at all, and certainly he would be no use to her dead at this stage. But she might have to press the stud. This harmless-looking adjunct of a distant machine lacked the compelling power of a gun muzzle aimed between a man's eyes. Her own confidence might be a more effective psychological threat than the very real danger of the lens in her hand.

She said in a brisk, decisive voice, "You're coming with me to Ericon, Egide—if we can find a way to get there. The Ancients promised me my chance, too, you know—and mine comes last. You can come back with me to be our hostage—or stay here dead. We haven't lost yet. With Jair gone and you captive, and with this new weapon of ours, I think we've still a good chance. The weapon's going to work its very best under circumstances like . . . don't touch that gun!"

He stood there staring at her, fingers hovering over his holster, decision still tilting in the balance. What would have happened had nothing interrupted them, Juille had no way of guessing. But as they faced one another in tense silence, a voice suddenly boomed from the wall above.

"So that's the Dunnar weapon!" Jair's bull-throated bellow roared above the roar of smashing worlds.

Juille started violently. But even in her amazement, she kept her thumb upon the stud and her eyes upon Egide's gun, though insane thoughts whirled frantically through her mind. Jair? Jair alive, with a needle beam through his stomach? Jair, talking in that full, confident bellow of his, when she'd left him dead and drifting through the violet twilight? It was some trick. She had seen illusions enough here to know that it *must* be some trick.

She risked one lightning glance away from Egide. The unmistakable figure of Jair himself leaned forward into the communicator screen of some yet undamaged world, grinning a bold white grin through the red beard. His red eyes twinkled with triumph, and the burn of her needle beam still marred his tunic to show that the shot had gone home. It *must* have gone home. There had been no heat flare to prove the presence of armor such as Egide had worn when she turned her gun on him.

She dared not look long at him, but her bewilderment had registered upon the screen as she flashed her gaze back to Egide, and she heard the familiar, rolling vibrations of Jair's laughter ring through the room.

"You shot me straight enough," he

announced. "But you'll never kill me with a gun. Tell her, Egide."

Egide was looking up at the laughing giant with a strange expression on his face.

"Jair is an android," he said. "You can't kill him."

Juille gave him a blank stare. She heard herself repeating stupidly, "An android?"

But she did not believe it. That was against all reason. Jair, the very essence of all warm, human masculinity—the frankly barbarous, the laughing Jair, with his voice that shook the walls to its deep timbre. She knew, of course, that androids existed. Cyrille had been making robot humans for a long while now, in such perfect simulacra of reality that only the very closest association could prove the difference. To all intents and purposes, they were real androids—manufactured humans with all the external attributes of flesh. But Jair—

"I had him made ten years ago," Egide told her in a bemused sort of voice, his eyes upon the window where the counterfeit H'vani looked down. "The perfect H'vani type—for a figurehead, you know. I'd got so used to him I seldom think of his not being—human. Sure you're all right, Jair?"

A bellow of mirth shook the walls above the roaring of Cyrille's worlds.

"All right?" Jair doubled a mallet-like fist and struck himself heavily upon the needle char where Juille's shot had gone home. The two humans winced involuntarily. "Just doubled me up for a minute," the android said. "That was enough, though. You did a fine job of wreckage, my girl. Now we'll do a better—down below."

Juille got her breath back with a rush.

"Oh, no, you won't," she declared confidently. "Not now." And she caught the red firelight again in her lens.

Jair's laughter was curiously cold. And Juille realized suddenly that it had always been cold. The laugh itself should have proved him inhuman. And a flurry of small recollections came back to convince her—his incredible quickness in gun-fighting, his speed, his silence, his machine-smooth efficiency of motion. Even the fact that he had not worn needleproof armor beneath his tunic. Then the bull-voice with its deeply vibrant pitch that should have been warm and human, and was instead cold to her ears now with the chill of machinery beneath the flesh:

"Go ahead, girl. Kill him."

Egide's face did not change. Juille thought she understood then his oddly bemused look of a few minutes before. He had remembered that Jair was what he was. He had known this moment was coming, and it did not surprise him now. The android could have no human emotions; loyalty was not in him.

And there went Juille's new hope of forcing Jair into captivity, too, with the threat upon Egide. Her shoulders sagged a little. But even in this fresh disappointment she kept her pressure firm upon the lens stud, and her eyes upon Egide.

"I'd save you if I could," the android's deep voice told the man who had ordered his creation. "It can't be done now. You aren't necessary any more. We've got Ericon, or will have. Too bad, Egide."

Egide nodded, no emotion on his face.

"The barons can carry on now," Jair told him carelessly. "Malon can take over, or Edka. They'll need me."

Egide looked up at the grinning, red-bearded face in the screen.

"They don't even know you're an android," he said emotionlessly.

Jair bent down upon them one last brilliantly warm smile. His eyes glinted with a sudden look of the pure machine.

"I know," he said.

Then he swung away and they watched his broad back receding into the depths of the panel. Beyond him Juille could see the shapes of tiny space boats racked as if in hangars, and untouched as yet by the destruction that

IF YOU'RE MAKING MORE MONEY

...WATCH OUT!

THIS YEAR Americans are going to make—minus taxes—125 billion dollars.

But this year, due to the war, we are going to have only 80 billion dollars' worth of goods to spend this on.

That leaves 45 billion dollars' worth of money burning in our jeans.

If each of us should take his share of this 45 billion dollars (which averages approximately

$330 per person) and hustle out to buy all he could with it—what would happen is what happens at an auction where every farmer there wants a horse that's up for sale.

We would bid the prices of things up and up and up. Instead of paying $30 for a suit we're going to pay $45. Instead of $5 for a pair of shoes we're going to pay $8.

This bidding for scarce goods is going to raise prices faster than wages. Wages just won't keep up.

So what will people do?

U. S. workers will ask for more money. Since labor is scarce, a lot of them will get it. Then farmers and business men who feel the pinch are going to ask more money for their goods.

And prices will go *still higher*. And the majority of us will be in that same old spot again—only worse.

This is what is known as Inflation.

Our government is doing a lot of things to keep prices down . . . rationing the scarcest goods, putting ceiling prices on things, stabilizing wages, increasing taxes. But the government can't do the *whole job*. So let's see what *we* can do about it.

If, instead of running out with our extra dough, and trying to bid on everything in sight, we buy only what we absolutely need, we will come out all right.

If, for instance, we put this money into (1) Taxes; (2) War Bonds; (3) Paying off old debts;

(4) Life Insurance; and (5) The Bank, we don't bid up the prices of goods at all. And if besides doing this we (6) refuse to pay more than ceiling prices; and (7) ask no more for what we have to sell—no more in wages, no more for goods—*prices stay where they are now*.

And we pile up a bank account. We have our family protected in case we die. We have War Bonds that'll make the down payment on a new house after the war, or help us retire some day. And we don't have taxes after the war that practically strangle us to death.

Maybe, doing this sounds as if

it isn't fun. But being shot at up at the front isn't fun, either. You have a duty to those soldiers as well as to yourself. You *can't* let the money that's burning a hole in your pocket start setting the country on fire.

★ ★ ★

This advertisement, prepared by the War Advertising Council, is contributed by this magazine in co-operation with the Magazine Publishers of America.

KEEP PRICES DOWN!

Use it up
Wear it out
Make it do
Or do without

was raging through Cyrille. That was the room she must get to, then—

Juille turned back to Egide, realizing that for the first time she had forgotten to keep her eyes on him. But he had not moved. He stared up at the screen, and his shoulders had the little sag her own had assumed a few minutes ago. When he met her eyes he grinned a bit.

"Am I still worth killing?" he asked.

Juille jerked her head toward the empty screen. "What do you think he's planning?"

"He wasn't built to plan. I don't know."

"What was he built for?"

Egide looked at her speculatively. "You don't understand the H'vani very well, do you? Savagery isn't always a vice, you know. There's got to be an influx of it every so often or civilization would bog down in its own rut. It always has happened—it probably always will. Right now my people are on the first rung of the ladder—they're emotional and childish and they need a figurehead. Well"—he nodded toward the wall—"that's Jair."

"Why not you?"

"They don't quite trust me. I'm not typical. Too much veneer for a true H'vani. Maybe too many brains. I had to have some perfectly trustworthy bully who could outfight and outyell the people. Someone with his own brand of charm, too. But anyone with those gifts would be too dangerous to use. He might want to take over, and I couldn't have stopped him. So"—Egide grinned ruefully—"I had the Cyrillians make Jair. It seemed like a wonderful idea. And it worked, too. Jair did a magnificent job. He never had to think, but he certainly could lead. I suppose even now he's done the right thing. From a perfectly cold-blooded viewpoint, the H'vani need a rallying point worse than they need me as a leader. Jair's much better for the job."

"But if none of your men knows he's an android—"

"I'm not so sure it matters now. I kept it a secret because I couldn't trust anyone at all not to let it slip, and my people—well, they wouldn't like that. But Jair's done his job well up to now. No reason why anyone needs to know."

"He certainly doesn't mean to tell them."

"I wonder. Hard to understand what was in his mind. No android ever had an opportunity just like this before. He never showed any more ambition, until now, than you'd expect from a machine. He may never show any."

"He won't." Juille said it confidently. Egide gave her an inquiring look. "The H'vani are going to find out their leader's not human. You're going to tell them." Her voice took on warmth as the new idea grew. "I haven't lost yet! You're still a hostage. You're going to broadcast to your people just what Jair is. Maybe we'll suggest that some of the other leaders are androids, too. If Jair's what they've been worshiping and following, that ought to shake all their confidence—or else nothing would!"

Egide stared at her almost with a reluctant admiration. She gave him no time to speak. "Drop your guns," she said. "And then go over there and try to get Ericon on the communicators. I don't think you can, but it's worth trying."

Egide gave her one long, searching look, as if not yet quite convinced of the validity of her weapon. But a change in the timbre of the noise that still poured in distantly through the breached wall reminded them both of the imminent danger, and after a moment, he obeyed.

Juille watched the guns clatter to the floor. Her mind was spinning with wary plans now—how to reach the room of the ships, how to keep Egide from overpowering her on the tumultuous way there, what to do first if they ever reached Ericon alive.

Egide turned from the unresponsive screens after ten minutes of futile effort. "Cyrille's dead," he shrugged. "Now what?"

Juille looked down at the lens in her hand. "We'll have to suspend hostilities for a while," she told him. "I can't keep my thumb on this stud forever. And I don't want to kill you now. I'll have to, though, unless you promise to keep a truce until we get back to Ericon. I'll even have to trust your word—"

He looked down at her with a smile. "I seem to fall somewhere between H'vani and Lyonese," he said dryly. "I'm civilized enough to make a promise and—well, savage enough to keep it. You can trust my word, Juille."

Juille's lips thinned; she dropped the lens back on its chain inside her tunic. All she said was, "We'll have to trace the hangar room from the screen up there. Do you know how?"

Egide pointed to a chart engraved on the wall beneath the panels. "If anything like halls are left outside here, we'll find it," he promised.

There were halls. Not many and not much of them, but enough to help materially. They opened the door and stood looking out at a crazily angled ceiling on which a tangle of debris clung as if to a floor. And Juille glanced up to find Egide looking at her gravely, without words. It was not difficult to guess his thoughts. Perhaps anger was the dominant emotion that made her flush so hotly. She could not be sure herself. After a moment, she said in a voice that sounded a little unsteady, "Let's go."

The fragments of hallways that remained were small, lucid stretches between lengths of howling chaos. Nothing in those lengths had any resemblance now to any normally balanced world. Juille found time to be thankful anew that most of Cyrille's materials were fireproof. Earth and air and water were churning insanely through the broken walls; if the fourth and most ravenous element were loose here too, not she or Egide or Jair would ever have left alive.

As it was, they were nearly swept away time and again as they made frantic dashes from shelter to shelter through the hurricane. Curiously, only the very small and delicate relics remained intact now. Trees, buildings, furniture that had made up the illusions were battered almost unrecognizably, but a swarm of gorgeously colored autumn leaves, for instance, had ridden with the storm and brushed stinging past.

Gravity shifted imponderably. They ran slowly, like people in a leaden-footed nightmare; they changed with unexpected suddenness to long, swooping strides that covered ten feet at a step. They sailed through the clogged air; they were smashed crushingly to the ground amid a rain of fragments made suddenly heavy.

The air was in strong motion now, and twice as they staggered along they heard the distant shriek of it rushing furiously through punctured space walls, dragging great winds behind it. But each time the tortured pleasure-world healed itself and they heard the suck and slam of locks automatically closing off the broken rooms. It might be a matter of minutes or hours before some stray lightning bolt, still ravening through the walls, pierced some bulkhead with broken locks, and Cyrille was sucked empty in one vast, sudden gust.

The avalanching water thundered somewhere not far off as they came at last to the hangar room, buffeted, breathless, very sore from the bounding of the tornado. But they had no time to rest. This apartment, like the Control Room, seemed to have a gravity machine of its own and the ships remained intact in their cradles, waiting to be launched each through its separate door. But a bolt might come smashing through the walls at any moment. The two refugees never remembered afterward just how they managed their escape. Neither of them had really expected to leave Cyrille alive.

The emperor looked up from his map. The cluster of officers looked up, too, but no one said anything as Juille came quickly into the room, saying, "Father—"

"Glad you got back," the emperor told her in a voice she did not know. She found she scarcely knew the man himself—this helmeted warrior with the fierce blue blaze in his eyes and the look of stunned bewilderment still a shadow upon his lined face. They all had that stunned look. Ericon had been invincible so long— Only the emperor seemed to know exactly what he was about. Even with this disaster upon him, even with the bewilderment still in his eyes, he knew what he was doing now, what he must do next. This was the man who had been so great and terrible a leader in the days of his youth; he was great and terrible again. No trace remained of the patriarch in white robes, pleading for peace. No trace remained either, Juille thought, of the indulgent father she had left.

He said again, "Glad you're back—" and for a moment stared at her with eyes that really saw what they looked at. But it was a curiously blind stare still. He knew vaguely that something more than that phrase might be expected of him, that in normal times, his only child's return from death would have been a signal for tremendous emotional release. Not any more. He was no longer a father or a man, but an emperor with the weight of imminent disaster on his shoulders. His mind was not functioning now except in terms of empire. He was a machine at this moment as Jair was a machine, all his faculties bent toward one consuming purpose.

"We're evacuating the city," he told Juille without preamble, and a cold, bright intensity burned in his voice and his lined face. It was not his daughter he spoke to, but a tried officer whose advice might be helpful. He was not questioning her presence or her past experiences, only her usefulness at this terribly urgent moment. "Through this pass here—" His steady finger traced a course across the map. "Up into the mountains where the forbidden woods make a pocket, the H'vani can't attack by air. Enough troops are left to make a stand until reinforcements start coming in from the planets. That Dunnar weapon ought to swing a lot of weight, too. Now—"

"It's still working?" Juille had seen too much of the city and the surrounding countryside ravaged by those dreadful broad swathes of molten ruin to have much confidence in anything material now.

"It's working. With any luck, it always will work." The emperor gave a ghost of a chuckle. "The H'vani sealed it in so tightly I don't believe anyone could ever dig it up again. That's once they've overreached themselves."

Juille received that and dismissed it with a nod. "Good luck for us. Father —so much has happened. You've got to listen to me. Haven't you even a minute to spare alone?"

The emperor gave her a keen look under his brows, then nodded to the little group of men and women around the table. "All right—one minute." Juille waited while they fell back out of earshot, down the length of the big shattered room through whose walls the smoke of the burning palace blew now and then in pungent, strangling gusts. She spoke fast.

"The Andareans—you don't know about that yet? They've been holding revolutionist meetings in the tunnels. And there's Egide—they told you I've brought him in as a hostage? I—"

"Hostage be damned," the emperor said abstractedly. "Only one thing matters right now—getting my troops out. You can't bargain with madmen like the H'vani when they're looting a city. Later—maybe. A wonder you ever got through their fleet—"

"I didn't come through. I thought I'd better circle—"

The emperor wasn't listening. "We have half an hour to clear the city. If you have anything important to say, say it and let me get back to work." He gave her a sudden cold glance across the map. "I haven't forgotten what you did in the council hall, Juille. That was

treason. You'll have to stand trial for it later. You may be responsible for the loss of the city."

"Your peace wouldn't have gone through, father. The H'vani came in conspiracy with Helia and her people. They got their new weapons from them. They never meant to keep the truce themselves."

The emperor's fierce blue eyes fixed her sharply. "You're not lying about that, are you? It's true?" His voice deepened with a note of anger she knew well. "All of you were playing me for a fool, eh? Using my truce to work your own lying schemes in. All of you! By the Ancients—" There was a thunder as vibrant as Jair's in the old man's voice. "By the Ancients, you all deserve to die together! I ought to let you! I had the possibility of peace in my very hands, and I let you destroy it among you—" But the brief anger passed, and the deep old voice diminished to a rumbling echo. "No, it wasn't your fault or mine. I saw the way out, but I couldn't show it to you. The race isn't worth saving." His big shoulders slumped. Then he saw the map and his head came up with a familiar blue glare in the eyes. "But I will save it! By the gods, I will. Get out of here and let us work, will you?"

"But father—" Juille groped in bewilderment for the reins of government that seemed so abruptly to have dropped from her hands. "I want to broadcast to the H'vani. If they find out we have Egide—and about Jair being an android they—"

He scowled at her, his face bright with alert intensity. "Android?"

Juille explained it in a few jumbled phrases, and saw a shadow dim the brilliance of his eyes as he followed that knowledge to its conclusion.

"Stop babbling," the emperor snapped. "You can't broadcast, you little fool. Didn't you see what's happened to the city? About that android—"

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Juille gaped at him, not listening. She had seen ruin indeed, all the way here. Whole city blocks melted into slag, fire pouring from the public buildings, half the palace itself battered into a shambles. But the thought of a blinded and silenced communicator system had somehow never occurred to her.

"None . . . none of it works any more?" she stammered.

"None." The emperor's voice was definite. "About the android—I don't like it. I don't like it at all." He brooded a moment. "Well—we'll climb that wall when we come to it. Now by the gods, will you get out and let me work?"

Juille looked up at the shattered walls of the room, with rain blowing through them, pungent with the smoke of nearing fires. She could see a stretch of purple thunderclouds, and her mind seized almost eagerly upon the sight—was it the same storm she had glimpsed from Cyrille, moving majestically over the face of Ericon? She knew she was grasping at straws, anything to avoid facing the truth. She had not yet realized the full extent of what had happened here, she did not really want to. Ericon was lost, but her mind would not face that yet. Automatically she looked about for the nearest communicator screen, so that she might convince herself with the grimness of the actual sight.

And there were no communicators. She could see no farther now than her unaided eyes could look. The knowledge was suddenly smothering. All her life she had had the wonderful windows of those screens to open at a touch upon any view she wanted, anywhere in the Galaxy. No walls had ever really shut her in before. No limits of eye or voice seemed narrow, for the sight and sound of worlds light-millenniums away had always been available at the touch of a stud. But now—

Juille looked frantically about the broken room, feeling for the first time in her life the full, crushing weight of a claustrophobia such as no race could ever have felt before now. Not a fear of confining walls, but of confining worlds—of solar systems too small to be endured. This was a blindness and a deafness beyond all previous experience—a god's scope cut abruptly down to the scope of a human. For a moment she fought an insane desire to batter against the intangible prisoning limits of her own senses. Their terrible pigmy boundaries struck her dumb. For the first time she knew what it was to be one small human creature in a galaxy of worlds, unaided by all her race had achieved on its way to the powers of godhood.

This was what the loss of civilization really meant. For the first time the full import of the Galaxy's great loss overwhelmed her. So long as she could see those lost worlds she might hope to win them back, but to be struck blind like this was to lose them forever. She knew a sudden agony of homesickness for all the planets she might never see again, a sudden terrible nostalgia for the lost, familiar worlds, for the fathomless seas of space between them. Ericon's eternal greenness was hateful, strangling in its tiny limitations.

And this was what her father had so desperately feared to lose that he had been willing to compromise even with the H'vani, so long as both races might maintain it. In this shattering revelation of what barbarism might really mean, she knew that her father had been right, indeed, and herself terribly wrong. But it was far too late to do anything at all about it now.

Through the green folds of the hills veiled by slanting rain, the emperor watched the remnants of his army wind slowly upward. He sat his fretting horse easily, looking down from this hilltop with much the same look upon his face that his portrait had worn in the Hall of the Hundred Emperors. Eager and fierce and proud. Around his neck over the armor he wore a chain and the small lens of the Dunnarian weapon. It

was ironically pleasant to know that the heart of that weapon lay safe forever beneath the very halls the H'vani were tramping now.

Juille knew he was thinking of that by the shadow of a grim smile that crossed his bearded face as he glanced back toward the tower of smoke above the city. Once, it seemed very long ago, she had wished aloud that she might have known the young warrior her father used to be. She knew him now. The emperor was magnificently that man again, with all the years of his experience added to give a depth the young man never knew. Age seemed not to have touched him today. He sat at the front of a little group of officers, watching the armies that were to avenge the Lyonese go streaming up the pass.

From this elevation they all could see the distant, undulating mass far down the valley that was the pursuing H'vani. Juille smiled a tight, triumphant smile. They were fighting on their home planet now, under conditions they knew by heart. They would beat the H'vani yet. On any other planet, planes could have bombed their infantry out of existence in a few minutes. But here, in this long arm of mountain land that lay between two forbidden territories, the Ancients permitted no aircraft to fly. The H'vani —Juille's smile deepened—had learned that to their awe-struck cost a little while before. They would send up no more ships over the lightning-guarded territory of the Ancients.

She looked sidewise at Egide. He sat with bound hands before him, his two guards near, his eyes on the following H'vani horde. They had spoken very little to one another since that long, silent flight through the H'vani fleet, with Ericon turning on its axis far below. Juille was a little startled to hear Egide speak now.

"Jair'll be leading them," he said, nodding down the valley. She gave him a keen glance, not at all sure even yet just how she felt about the H'vani's captive leader. She said in a noncommittal voice:

"He won't be leading long. We'll get our broadcasters in order again—"

"Maybe," said Egide, and was silent.

Juille glanced down at the small animal balancing on her knee. The *llar* had a curious way of turning up at most of the crises in her life. It was here now at one of the highest. She put out a tentative hand to caress it, and to her surprise, the little creature permitted the gesture. She wondered if its recollection of that episode in the tunnels had reconciled it to her touch at last. The great eyes stared up into hers with owlish intentness as it pushed its smooth head against her hand.

Someone said, "I see we have something in common, highness," and she looked up into the gray gaze of the man from Dunnar. He was smiling and nodding toward the *llar* as it bent its head to her caress. Juille smiled.

"It's my turn to be flattered now. The two of you did me a great service. I may not have thanked you properly yet."

The envoy shook his head. "Your pet deserves the thanks, highness."

"It was amazing," Juille began eagerly. "How did you manage it? I'd never have believed such a thing could happen."

The man smiled his remote, enigmatic smile. "I will tell you that soon, highness," he said. "Not quite yet, but soon." He flung one corner of his dark cloak over his shoulder and turned away. Juille watched him thoughtfully, a tall, thin figure of regal elegance in that cloak.

Egide's voice recalled her.

"I think I can see Jair from here," he said, leaning forward over his bound hands on the saddlehorn. "They've got that third weapon, Juille. See it—the glint of light there at the front?"

Juille caught her breath sharply. The third gift of the Andareans! She had forgotten that. She had let her father plan his campaign without considering it.

"What is it?" she asked Egide fear-

fully, wondering if he would tell. He looked at her with an expression difficult to analyze.

"A paralyzer," he said simply.

"But we've got those. That's nothing new."

"This works on a bigger scale than anything we've ever had. You've got small hand-paralyzers. This is an attachment that transforms a standard heat-beam caster into a machine to throw a long cone of force. It can whittle your army down by battalions. Once that goes into operation—" He shook his head, lips tightened.

Juille gave Egide a curious glance. Then, without speaking, she shook her reins and rode forward to her father's side. They spoke briefly. In a few minutes, several men with lenses hanging at their necks, slipped down the hillside and vanished into the underbrush bordering the valley. Juille rode back looking confident.

"All right," she said. "They won't find it so easy now. We have our weapons, too, you know. You might have guessed I'd stop that cannon if I could."

"Of course I guessed."

Juille looked at him in bewilderment. He was smiling.

"I'd like to talk to you alone," he said. She hesitated. Then she nodded to his guards and turned her horse aside, leading the way a little distance off toward the brow of the hill. They sat there side by side, watching the two armies winding up the valley. Rain had almost ceased now. A cold wind blew in their faces, and overhead the purple thunderclouds came rolling up faster than the H'vani hordes.

Egide said, "Juille—" and stopped. After a moment, he tried again. "Juille—do you think the H'vani will defeat you?"

"They have a chance," she admitted. "But no, they won't."

"You're sure?"

"How can anyone be sure? I don't believe they will."

"But they have the edge now."

"What of it?" She twisted to face him angrily. "You don't have to boast about your people."

He smiled at her. "They aren't my people now." Juille looked at him with bewildered eyes. He went on, "I'm through with the H'vani. I couldn't say so before—you'd have thought I was afraid and trying to join the winning side. But you can't think that now."

Juille struggled for words. "But—why? *Why?* You organized the attack! You—"

"Oh, I had a great many plans," he said, smiling rather wryly. "I liked working out ideas and watching them succeed. But lately—I've changed." He looked at her as if uncertain whether to follow that idea any further just now. She was still staring at him in puzzled confusion. He said, "Don't look at me like that. I've been thinking this over for quite a while. It isn't as if I were deserting them when they need me. And I've never had much in common with them. Remember, it took Jair to win their hearts."

"But you can't change over like that, without any reason," Juille insisted uncomprehendingly. "You don't—"

"I have my reasons. You're thinking it's a trick, aren't you? Well, it isn't. Why should I trick you now, when it's your side that's losing? When you've got my life there around your neck on a chain?"

Juille's hand went up automatically to her breast where the lenses hung. She thought she was beginning to understand what Egide meant. Her mind went back over the confusion of disastrous things that had happened so swiftly, and paused at the episode in the forbidden woods of the Ancients, when she had stood in Egide's arms and tentatively made herself a promise. When she had him where she wanted him, she remembered now, she had told herself she might not fear the treacherous weakness of emotion. She had thought then

that even love might be safe—later. And it was—later—now.

Egide was watching her, a smile beginning to quirk his mouth. She watched his face warm and soften, finding that she knew just how each line and plane would alter with the changing mood. He was very attractive when he smiled. The rain had made his yellow curls darken and tighten to almost sculptured flatness, and the rain on his lashes and his beard twinkled as he shook his head, still smiling.

"You'll never trust me, will you?" he said. "You'll never trust anyone. Even yourself. Least of all yourself—"

"I might," Juille told him softly, hardly knowing her own voice. Her fingers were on the chain about her neck, and almost unconsciously she found herself pulling out the deadly little ornament that held Egide's life. When she realized what she was doing she glanced down, and then sat perfectly still for a long moment, her eyes growing wider and wider. Very slowly she pulled the chain all the way out of her tunic. The color had drained from her face; and as Egide looked, his own color faded. They sat in silence, looking at the broken chain.

The lens was gone.

Juille stared down at the break, too stunned for thought. Somewhere, somehow, in the turmoil of evacuation, she had lost it. Anywhere. In the city. Along the road. In these pathless hills. Somewhere—anywhere. At this moment some curious person might be stooping to pick it up and toy with the black stud. It might lie lost forever, untouched, here in the woods. Or at this moment, or any moment hereafter, Egide might slump over dead in his saddle.

There were many disastrous implications behind the loss, but her thoughts had room for only one just now. All the emotions that had churned in her mind so long about him—all the distrust, the contempt, the reluctant warmth—suddenly crystallized. Her defenses

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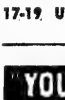

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went down with a rush and she knew that of all things in life, what she wanted least was Egide's death.

They sat looking at one another in the midst of a tremendous silence. For this small interval, there was nothing at all to stand between them, neither H'vani nor Lyonese, nor cold ideals nor mistrust, nor any of the hours of their enmity. During all the time they had known one another, only a few moments had validity. The interval on the cloud beneath the stars; the interval of their dance, the moment of their kiss in the green, forbidden woods. All other meetings had been meetings of strangers, not themselves.

For Juille it was a moment of almost intolerable poignancy. And perhaps her barriers were down so utterly in this one destroying moment because she knew in her heart that the hours of this surrender were numbered. Traitor she might be to all her Amazon principles—but she could not be traitor long.

Wordlessly, Juille leaned forward and untied the cords that held Egide's hands together. While she touched him, for an instant longer, the stars and the shadows of the wood still hung about them. But before either could speak, or wanted to, the emperor's voice broke in.

"Juille, I'm going down," he called. "Wait here, child. I'll signal when I want you. The H'vani are catching up with our rear guard."

She came out of the bemusing quiet slowly, too distracted to realize how completely now the reins of control had been taken from her hands. The emperor and most of his men were riding down the hillside before the import of his words came to her clearly. She watched them hurrying down, cloaks billowing, and the rain slanting in long gusts between.

Farther down, half hidden by the hills, she could see that the vanguard of the H'vani was almost upon the last of the escaping Lyonese. There was a turmoil about the length of the shining cannon whose secret the Andareans had betrayed, and Juille knew the new weapon of the Lyonese had taken its first toll among the enemy. There would be more.

She turned to Egide. He was watching her gravely, hands clasped on his saddlehorn. There seemed very little to say just now. Perhaps the time had not yet come for speech. Juille urged her horse nearer his and they sat side by side, knees touching, and watched the emperor riding down the hill.

In the valley the two forces had begun their meeting. From here they could see a big figure at the H'vani's front, red beard and red head a beacon for the invaders to follow. Now and again an echo of Jair's tremendous resonant roar floated up to them above the rising clamor of battle, but for the most part, they heard little. The wind was strengthening; it screamed in their ears and carried the shouts of the fighters away up the valley.

They could see turmoil growing among the H'vani. Far back in the ranks where no men should yet be falling, men fell. The Dunnarian weapon was reaping its first casualties. But Jair's great voice and his irresistible, compelling presence were keeping order among the frightened men.

And suddenly Juille knew that the Dunnarian weapon must fail. Its intrinsic purpose was the slaughter of the leaders at their peak of importance. And Jair would never die by that weapon. He was immortal, not heir to any weakness of human flesh. So long as he remained on his feet the H'vani would not break even in the face of this mysterious silent death that had begun to strike among them.

Jair would become a legend. He might even become a god for his awe-struck followers. And the last hope of demoralizing the barbarians was gone now. If Juille could have proclaimed Jair's origin before this battle, the H'vani might have been shaken. But now nothing could shake them. Even

if they believed her story, the very belief might deify Jair still further.

A familiar voice at Juille's side echoed the thought.

"How strange," said the man from Dunnar, "that they found no human creature to personify for them half the courage and warmth and power they see in this man of metal!"

Something about the pitch of his voice made Juille turn sharply, almost unseating the *llar* that still clung to her knee. The Envoy was looking down the valley, his strange, narrow-skulled head in outline against the piling storm clouds. The cold wind whipped his cloak backward, but his great translucent eyes did not narrow to the blast. Juille was searching his face with a new fascination. The beaked nose, the controlled, cruel mouth. The air of intolerable elegance and fastidious, aloof poise. Juille swallowed hard. For she had heard his voice before, under strange circumstances. She groped after the memory, almost caught it. That calm, clear, familiar tone, saying—

Suddenly she knew. She had heard it in the temple of the Ancients.

He turned his head slowly, and the enormous, clear eyes met hers. He smiled.

"Yes," he said.

Afterward, looking back, the interlude seemed like a hallucination, an unconvincing stage-set painted upon gauze, drawn briefly between Juille and the woods, while the thunderstorm rolled above them in the purple sky. But in the first moment after she had recognized that voice, realities stood out sharp and clear all around her, intensified because she could not speak or think coherently. Everything else was drowned in the overwhelming knowledge of who this man must be. And that he was no man at all. And what unimaginable shape he must really wear behind that illusion of humanity. And—

"Yes," said the Envoy, smiling his thin smile across her at Egide. "You, too."

Juille never knew how long they sat there in silence, while the cold wind whistled about them and in the strange yellow light of storm, the two armies locked in battle down below. She thought she would never speak again. She could not even turn her head to face Egide for comfort in this bleak and overwhelming moment.

The Envoy said, "Each of you came to us for help. And each of you was answered. But you and your people had gone too far already along the road all humans go. There was still one brief moment when you could have saved yourselves. But your instincts were wrong. That time is gone now."

"Every race has come to this end, since the first men conquered the Galaxy. Each of them sows the seed of its own destruction. Always a few see the way toward salvation, and always the many shout them down. But each race has its chance—"

He looked down sternly over the struggling masses in the valley. Mists were beginning to drift between them now. The Envoy was a tall silhouette against the purple clouds of the storm. As he spoke again, the thunder rolled in his voice and in the darkening sky.

"Every nation digs its own grave," he said. "And we are weary of mankind, forever thwarting his highest dreams and trapping himself in the end to a ruin like"—he nodded—"that down there."

Silence for a long moment, while the noises of battle came up faintly, Jair's great rich, carrying shout above all the rest, bellowed from his throat of brass. Juille sat very still on her horse, glad of the pressure of Egide's warm knee, all thought and speech frozen in her as she saw the Envoy's head turning her way. He looked thoughtfully into her face.

"You have set in motion already the forces that must destroy the Lyonese. You were the spokesman for your race, chosen fairly, typical of your kind. And

of your own free choice you did it. Nothing can change that now." Then the narrow skull turned farther, and he looked across her at Egide. His great eyes were the color of the spattering rain, as cool and translucent and inhuman. "You," he went on, "gave your people a man of iron to worship, and nothing you can do now would swerve them from following it. It will lead them to destruction. How very strange—" The Envoy paused a moment and looked at the two with a sort of puzzled wonder. "How very strange you humans are! How unerringly you unleash upon yourselves the instruments of your own destruction. How long ago the two of you here took the turnings that led you to this hilltop, and your people to their ruin down there. Perhaps the turnings were taken long before your births." He smiled impersonally in the vivid yellowish light. "I know they were. Your first forefathers took them, and you had no choice but to follow, being of human flesh." He sighed. "But the end comes just the same. It's very near now."

"You wonder which will win down there." He glanced toward the struggling armies, almost hidden now in the mist. "Neither."

"Neither will win," he told them. "Man has run his last course in our Galaxy. There were those before him who ran theirs, too, and failed to profit from it, and died. Now we weary of man. Oh, he may live out his failing days on the other worlds. We plan no pogrom against mankind." His voice quivered for an instant with aloof amusement. "Man himself attends to that. But here on Ericon, our own peculiar world, we are weary of man and we want no more of him."

He sent one cool downward glance toward the sounds of battle in the fog, the shouts, the muffled roar of guns, the flashes of fire-sword and pistol and artillery. Then he shook his reins gently and his horse turned toward the woods, where rain was beginning to rustle again among the leaves.

"We have great hopes," he said, "for our new race to come." And he held out his hand.

Something stirred upon Juille's knee. She looked down dumbly. The *Ilar* flashed up at her one fathomless glance, all the sadness and wisdom and benignity of its race luminous in the great grave eyes so startlingly like the Envoy's. Then it flowed down from her lap to the ground with its alarming, boneless ease, and went rippling over the wet grass toward the Envoy.

Juille looked up. She had no idea why. But she was not surprised to see again the heights of great inward-leaning walls looming dark above the trees. When she lowered her eyes the Envoy and the *Ilar* had gone.

"I suppose we'd better go down now," Juille said, and put out her hand. Egide turned a quiet blue gaze upon her. The faintest flicker of a smile touched his face and his warm, gun-calloused fingers closed about the hand.

"Yes, I suppose so," he said.

Juille had an extraordinary conviction of hiatus in her life for the past ten minutes. She knew quite well what had been happening while she sat there stricken voiceless and all but mindless in the presence of the gods. She knew she would never quite forget it—or ever speak of it to Egide. But it seemed singularly unreal. The human mind is not constructed to accept defeat even in the face of finality. She could not now bring hers to accept that memory. What had happened seemed of a different time and texture from the period before or since—an interval of flimsy unreality, a gauze incident, to be dismissed and forgotten.

And yet, she thought, if it were true—if she herself had set into motion the juggernaut that would destroy all her hopes—a part of it was still good. Egide's life was forfeit to pure chance now, through her doing alone. But if she had not imperiled it, she might never have valued the life or the man.

Meeting that faint softening of a smile that touched his face, she knew he was sharing a thought like hers. Thanks to that one terrible error, they would at least live each measured moment that remained to them with a vividness that should pack a lifetime's awareness into every hour.

Still clasping hands, they rode down the hill slowly. Mists were thick now, and they could see almost nothing of the turmoil below, but Jair's great brazen voice, rich with the vibrating warmth of his spurious humanity, came rolling up to them in brief snatches. A juggernaut of brass. Egide's juggernaut. Perhaps mankind's last and coldest and most ardently worshiped god.

In the temple of the Ancients a small figure stood before the high, dark altar like a wall, too high for it to see the gods. It clasped and unclasped the facile, fingery paws, like a sea-anemone's tendrils —so many-fingered, so dextrous, so nervously eager to be about the great task of testing the limits of their skill.

Its mind was not here in the temple. It was seeing the warm, sand-floored caverns of its people, lit by a garden of colored windows, mult-shaped in the twilight of the cave. It was not alone, though it sat here nervously twisting those eager, impatient fingers. No llar is ever alone. The warm awareness of its unity with its city lies behind that poise and quiet pride. It looks out of the strange round eyes with a wisdom and benignity which is of the race, not the individual. This race alone, of all thinking species, finds deity in itself, in the warm closed circle of its own unity. Once it gains the little foothold it needs on which to found its soaring possibilities, this race alone need not depend upon the gods.

Serene in its own confidence, in its own warm knowledge of identity with its race, the llar sat clasping and unclasping those eager fingers and listening to the oracle it knew it could not trust.

THE END.

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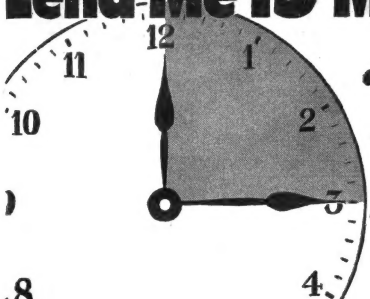

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I Was a 97-lb. Weakling

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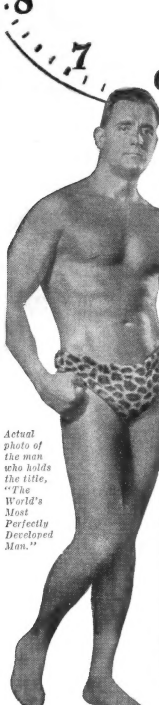
In just 15 minutes a day, right in the privacy of your own home, I'm ready to prove that *"Dynamic Tension"* can lay a new outfit of solid muscle over every inch of your body. Let me put new, smashing power into your arms and shoulders—give you an armor-shield of stomach muscle that laughs at punches—strengthen your legs into real columns of surging stamina. If lack of exercise or wrong living has weakened you inside, I'll get after that condition, too, and show you how it feels to LIVE!



Actual photo of the man who holds the title, "The World's Most Perfectly Developed Man."

Charles Atlas
America's Greatest "Builder of Men"

Among all the physical instructors and "conditioners of men" ONLY ONE NAME STANDS OUT. That name is **Charles Atlas!**

In every part of the country **Charles Atlas** is recognized as "America's Greatest Builder of Men." Almost two million men have written to him. Thousands upon thousands have put their physical development into his capable hands!

And now that the call is for men capable of helping America meet and conquer any national emergency, many thousands of others (even those already in their country's Army and Navy) are calling upon Charles Atlas to build the kind of men America vitally needs.

Here's PROOF Right Here!

"Result comes so fast by your method that it seems just as if some magician put on the pounds of solid muscle just where you want them!" —**W. L., Missouri**

"Feel like a million dollars and have a 4" normal chest —a 2" GAIN!" —**L. A. S., Illinois**

"My doctor thinks your course is fine. Have put two inches on my chest and ½ inch on my neck." —**B. L., Oregon**

"My muscles are bulging out and I feel like a new man. My chest measures 38 in., an increase of 5 in., and my neck increased 2 in." —**G. M., Ohio**

FREE

This Famous Book that Tells You How to Get a Body that Men Respect and Women Admire

Almost two million men have sent for and read my book, *"Everlasting Health and Strength."* It tells you exactly what *"Dynamic Tension"* can do. And it's packed with pictures that SHOW you what it does. Results it has produced for other men. RESULTS I want to prove it can get for YOU! If you are satisfied to take a back seat and be pushed around by other fellows week-in, week-out, you don't want this book. But if you want to learn how you can actually become a NEW MAN, right in the privacy of your own home and in only 15 minutes a day, then mail—get this coupon into the mail to me as fast as your legs can get to the letterbox! CHARLES ATLAS, Dept. 628, 115 East 23rd St., New York 10, N. Y.

MAIL THIS COUPON NOW

CHARLES ATLAS, Dept. 628
115 East 23rd St., New York 10, N.Y.

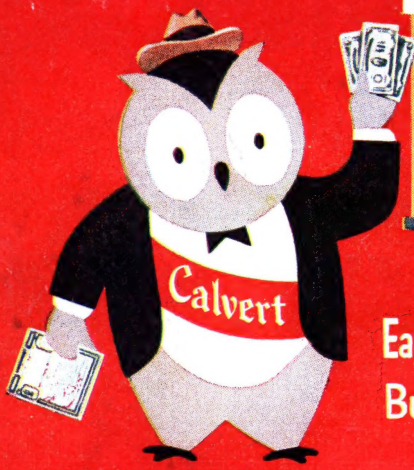
I want the proof that your system of *"Dynamic Tension"* will help make a New Man of me—give me a healthy, husky body and big muscular development. Send me your free book, "Everlasting Health and Strength."

Name.....
(Please Print or Write Plainly)

Address.....

City..... State.....

☐ Check here if under 16 for Booklet A



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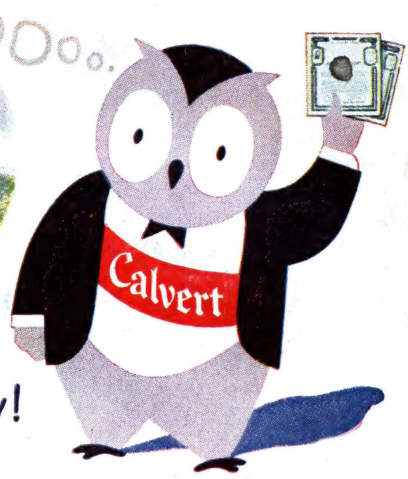
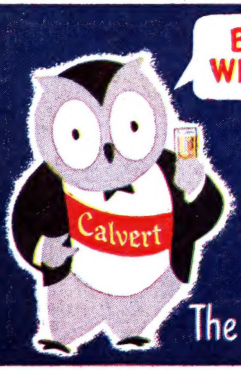
Each bond and stamp helps pay for war
Buy all you can – and then some more!



Remember: Bonds you sock away
Will make your dreams come true some day!



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